The Journal
OF THE KANSAS MEDICAL SOCIETY

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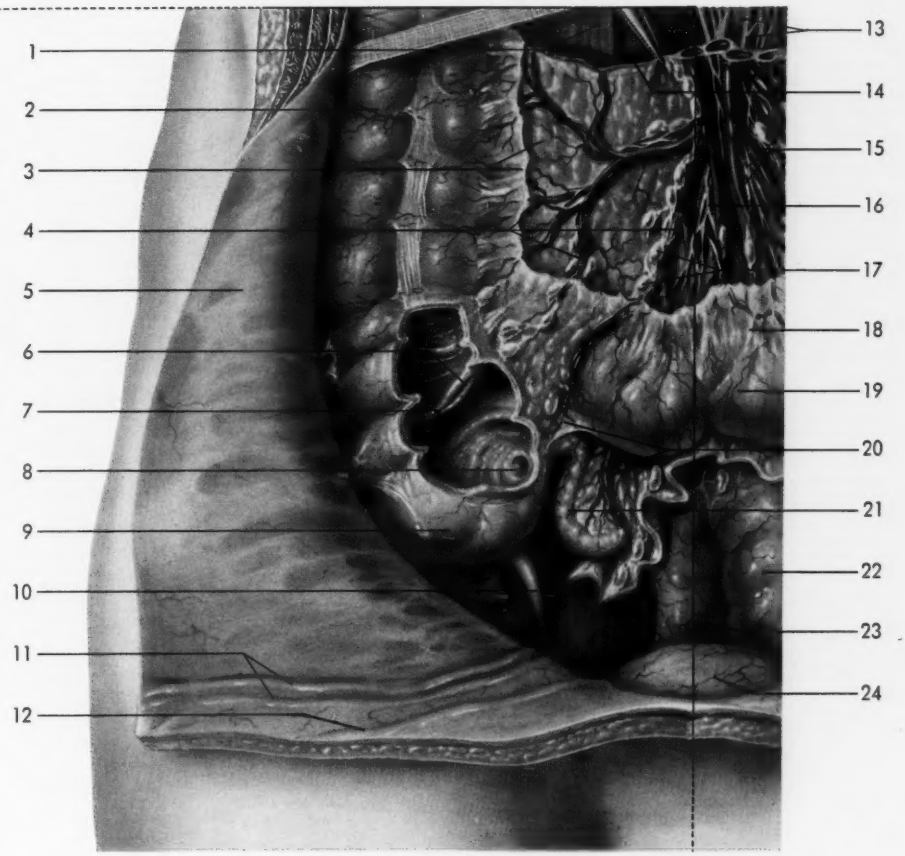

1 Spermatic artery and vein
2 Ascending colon
3 Mesocolon
4 Branches of ileocolic artery and vein
5 Parietal peritoneum
6 Ileocecal valve
7 Frenum
8 Appendicocecal valve
9 Cecum
10 Ureter and external iliac artery and vein
11 Epigastric artery and vein
12 Lateral umbilical ligament
13 Aorta and abdominal aortic plexus
14 Vena cava
15 Intestinal arteries and veins
16 Sympathetic abdominal plexus
17 Ileocecal lymph nodes
18 Mesentery
19 Ileum
20 Ileocecal fold and appendicular artery and vein
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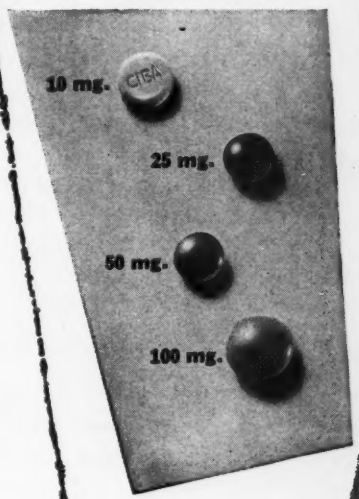

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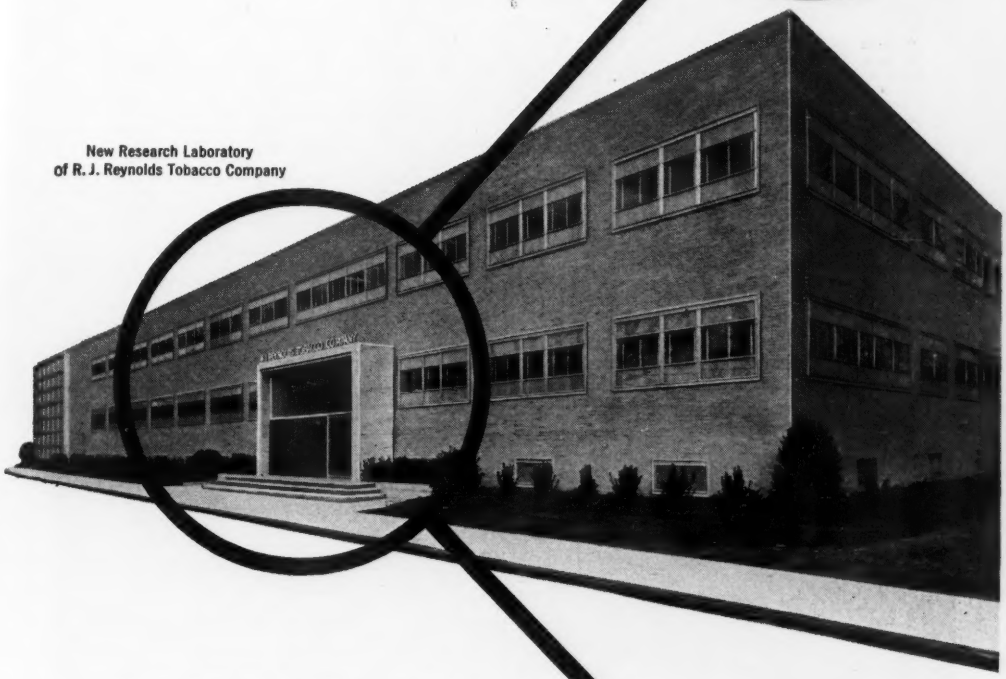

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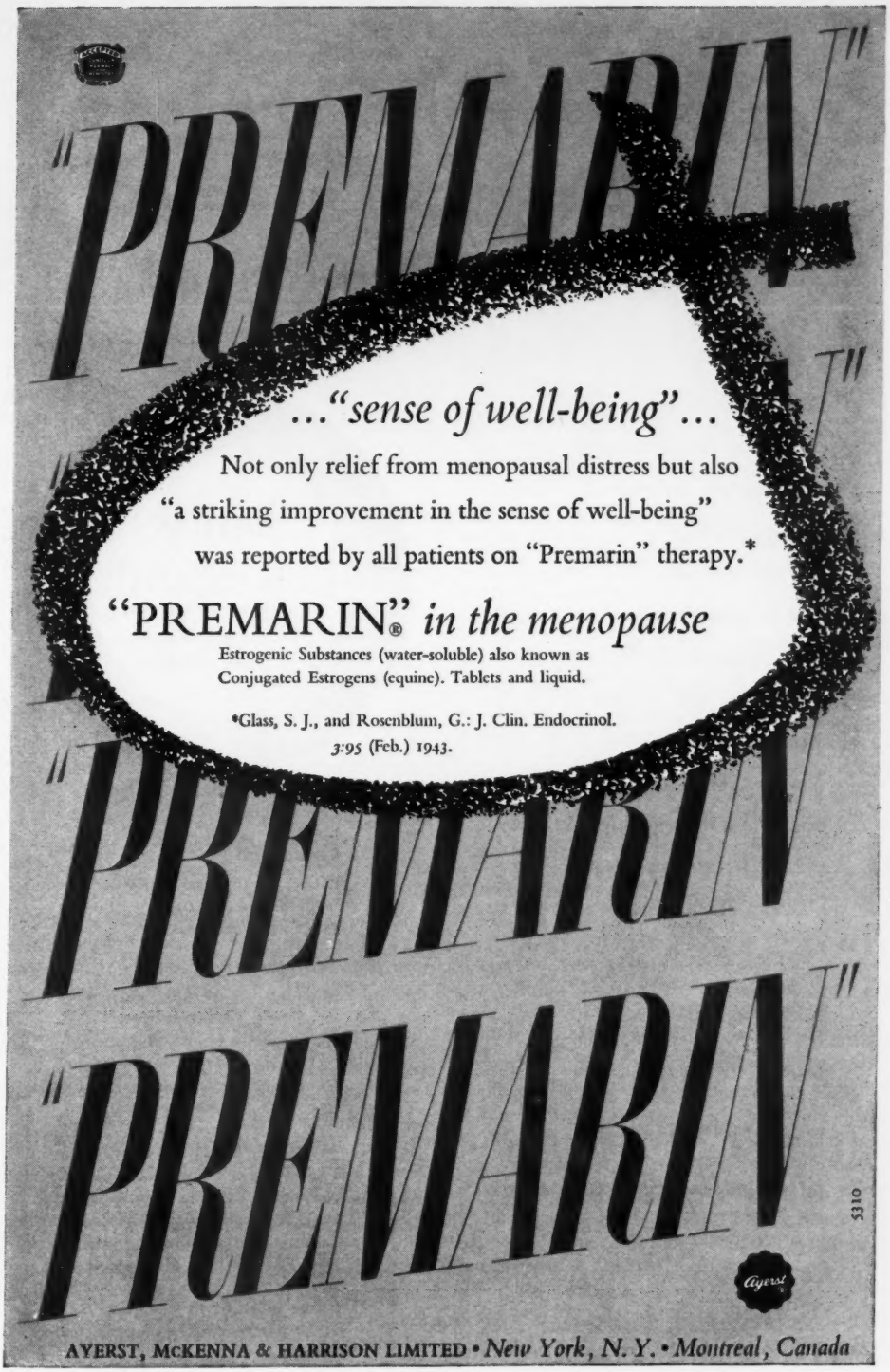
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Hysterectomy—A Clinical Consideration*

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We at Tulane do not agree completely with many statements made concerning the frequency of hysterectomy. We feel that this procedure is a necessary one where proper indications are present. We particularly feel that there is little place for such procedures as the Manchester operation, bilateral salpingectomy, cervical amputation and/or uterine suspensions, especially in women where pregnancy is no longer desirable. Certainly hysterectomy is the procedure of choice in such individuals. Menstruation or periodic bleeding is not necessary for the health of the female, either physiologically or psychologically.

Most reports concerning hysterectomy include a great percentage of so-called conservative procedures that have been done prior to the removal of the uterus, which so often becomes necessary. Tyrone,[1] in reporting on 2,000 personal hysterectomies in 1951, stated that 691 of his patients, or 35 per cent, had not been relieved of their symptoms by previous so-called conservative pelvic surgery, but were restored to complete health after removal of the uterus. Phaneuf,[2] in reporting a private series of hysterectomies in 1948, stated that about 60 per cent of his patients had been operated on previously for various complaints.

We shall discuss for you separately, abdominal and vaginal hysterectomy. May we emphasize at this time that these two procedures should not be considered competitive in any respect. Each has its own place, and all who do pelvic surgery should be equally capable in the performance of either procedure.

Each patient must be individually evaluated. We must consider the type and extent of pathology, history of previous pelvic surgery, obesity, and/or the presence or absence of uterine prolapse. The size of the uterus, its mobility, and the presence or absence of cystocele or rectocele are factors that certainly influence to a great extent the choice between the abdominal or the vaginal route. Surely one would not attempt the vaginal route for removal of a uterus that is firmly fixed by inflammatory adnexae or extensive pelvic endometriosis. We are equally sure that the abdominal route would not be advocated in the presence of considerable uterine prolapse. We cannot, however, agree with the advocates of vaginal hysterectomy for large uterine fibroids by morcellation. In our hands, abdominal hysterectomy is by far the safest procedure for removal of the uterus that has attained the size of a 3-month gestation or larger because of the presence of fibroids. We do not believe in doing a very difficult vaginal hysterectomy simply to prove to one's self or his resident that it can be done. The question of previous pelvic surgery as a contraindication to the vaginal approach is a logical one, and here individualization and one's experience are often the only answer. Certainly the vaginal route is preferable where repair of a cystocele and/or rectocele is necessary.

The common indications for abdominal hysterectomy in the presence of benign pelvic disease are: leiomyomata, pelvic inflammatory disease, pelvic endometriosis, extensive cystic cervicitis, benign uterine bleeding near or past the menopause, and occasionally benign ovarian tumors.

We feel that total abdominal hysterectomy should be done in the presence of leiomyomata causing uterine bleeding with or without pain. The question of when a myomectomy should be done, rather than a hysterectomy, can be answered in this manner. In the

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colored race myomectomy is seldom indicated because of the size and multiplicity of the tumors and the almost invariable association of pelvic inflammatory disease. Myomectomy is chiefly indicated in the white patient for sterility when the myomata is probably the only causative factor.

Pelvic inflammatory disease, as seen on our service at Charity Hospital in New Orleans, requires total hysterectomy in most instances, particularly where tubo-ovarian abscesses are present. Conservative surgery in the presence of extensive pelvic inflammatory disease usually means additional surgery. Fortunately, such extensive pathology is seldom seen in our private practice, but where it does occur the treatment should be as in the charity patient. We feel that total abdominal hysterectomy and salpingo-oophorectomy is the treatment of choice for chronic pelvic inflammatory disease when any of the following conditions exist: persistent low abdominal pain exaggerated during menstruation, irregular and/or prolonged uterine bleeding, and the presence of persistent, painful adnexal mass or masses. Where endometriosis requires removal of the adnexae, a total hysterectomy is always done. We never use radiation therapy for benign uterine bleeding near or after the menopause, preferring quite definitely total hysterectomy in such instances.

Most gynecologists today consider total hysterectomy with removal of the cervix along with the body of the uterus the procedure of choice when the abdominal route is used. There are many, however, who still feel that supravaginal hysterectomies have to be done occasionally, especially where endometriosis or pelvic inflammatory disease involves the uterus with considerable fixation, particularly in the region of the sigmoid. Certainly the evidence accumulated through many reports leaves little basis for controversy as to the relative superiority of total over supravaginal hysterectomy. The reasons we advocate the total procedure are:

1. Mortality and morbidity rates for total abdominal hysterectomy are lower than those encountered in supravaginal hysterectomies.

2. The frequency of return of patients with symptomatic cervical stumps. The symptoms commonly noted are leukorrhea, pelvic pain, backache, vaginal bleeding, dyspareunia, and urinary discomfort.

3. The possible development of malignancy or its presence in the cervix at the time of surgery. It has been reported that malignancy of the cervical stump after supravaginal hysterectomy has an incidence of from 2 to 8 per cent. Collins[6] reported that in patients with cervical stumps having bleeding as a symptom, 11.9 per cent had cancer of the cervix.

Our staff at Tulane[3] have for many years been in favor of total abdominal hysterectomy rather than supravaginal hysterectomy. However, a few were still of the opinion that supravaginal hysterectomy was the procedure of choice in some instances, and their percentage of total hysterectomy for benign disease did not nearly approximate the percentage of those who had realized that total hysterectomy was the more desirable procedure. During a period beginning July 1, 1950, an attempt was made on the Tulane gynecological service of the Charity Hospital of Louisiana at New Orleans to show that total hysterectomy can be done safely in all instances that require removal of the uterus. Each year during the past 10 years on the Tulane gynecological service, there has been a continued decrease in the number of supravaginal procedures with a concomitant drop in the mortality rate.

In 1941 Miller and Prejean[4] reported 828 hysterectomies from the Tulane service for the years 1939 and 1940. Two hundred fifty-five, or 40 per cent of the 629 abdominal cases, were of the supravaginal type. In this group there were 7 deaths, or 2.75 per cent. There were 5 deaths among the 374 total abdominal hysterectomies, or 1.33 per cent. The mortality for the entire group of 828 hysterectomies was 1.68 per cent (Table 1).

TABLE 1

HYSTERECTOMY
TULANE UNIT—CHARITY HOSPITAL
Jan. 1, 1939 to Jan. 1, 1941

Type				*Mortality*
			Total 374 (59.6%)	5 (1.33%)
Abdominal	629 (86.1%)	Supra-Vag.	255 (40.4%)	7 (2.75%)
Vaginal	199 (23.9%)			2 (1.00%)
Cases	828 (100%)			14 (1.68%)

During the 5-year period 1946 to 1951, there were 2,097 hysterectomies on the Tulane service at Charity Hospital. Of 1,546 abdominal procedures, 110 were supravaginal hysterectomies, or 7 per cent. There were 9 deaths among the 1,436 total abdominal hysterectomies, or .63 per cent, and 6 deaths among the 110 supravaginal group, or 5.4 per cent. The mortality for the entire group of 2,097 hysterectomies was 0.81 per cent (Table 2).

TABLE 2

HYSTERECTOMY
TULANE UNIT—CHARITY HOSPITAL
Jan. 1946 to Jan. 1951

Type				*Mortality*
			Total 1,436 (93%)	9 (0.63%)
Abdominal	1,546 (74%)	Supra-Vag.	110 (7%)	6 (5.45%)
Vaginal	551 (26%)			2 (0.36%)
Cases	2,097 (100%)			17 (0.81%)

During the period July 1, 1950, to January 1, 1953, 745 hysterectomies were done on the Tulane service. Of the 511 abdominal hysterectomies done during that period, only 2, or .39 per cent, were of the supravaginal type. There were four deaths in the 511 abdominal cases, or .78 per cent. The mortality for the group of 745 hysterectomies was .53 per cent, there being 4 deaths, all in the total group (Table 3).

TABLE 3

HYSTERECTOMY
TULANE UNIT—CHARITY HOSPITAL
July 1, 1950-January 1, 1953

Type				*Mortality*
Abdominal	511 (68%)	Total	509 (99.61%)	4 (.78%)
Vaginal	234 (32%)	Supra-Vag.	2 (.39%)	0 (0%)
				0 (0%)
Cases	745 (100%)			4 (.53%)

Since beginning private practice, I have performed 452 hysterectomies. Of the 279 abdominal type, 270, or 97 per cent, were total; and 9, or 3 per cent, were supravaginal. I have not performed a supravaginal hysterectomy since 1947. There were no deaths in this group of 452 hysterectomies (Table 4).

TABLE 4

HYSTERECTOMY
PERSONAL SERIES—1940-1953

Type				*Mortality*
Abdominal	279 (62%)	Total	270 (97%)	0 0.00
Vaginal	173 (38%)	Supra-Vag.	9 (3%)	0 0.00
				0 0.00
Cases	452 (100%)			0 0.00

In spite of the fact that all patients in the recent series at Charity Hospital with abnormal cervices were biopsied before hysterectomy, and all patients with abnormal bleeding at or past the menopause were curetted prior to operation, 9 cases of incidental cancer were discovered at histologic examination of the specimens removed.

It has been argued that the decrease in morbidity and mortality observed where total hysterectomy has been performed was due to the fact that this procedure was used in the more favorable cases, whilst the supravaginal procedure was reserved for the so-called bad risk case, or patients with extensive pelvic pathology.

In 1950 the chairman of the Tulane gynecological service established a rule that no supravaginal hysterectomies were to be done on this service. At the time of its enactment, this edict appeared to be somewhat far reaching and to our knowledge had not been attempted on a similar group of patients. It was only by adopting such a rule, however, that a study could be made of the comparative value of the two procedures, utilizing the same material, staff, and facilities.

Radiation therapy and/or repeated uterine curettage for control of benign disease has not been used on the Tulane service since January, 1946. In my own practice, I have not used such therapy during the past 15 years. Patients with abnormal uterine bleeding, pelvic pain, or benign tumors were treated by hysterectomy, irrespective of the patient's age or physical condition. It is to be re-emphasized that in no case was the patient denied the benefit of hysterectomy because of any of these factors, provided they could be controlled before surgery.

Despite the request of the chairman of the department that no supravaginal hysterectomies be performed on the Tulane service, it was found that 2 of this type were done during this 30-month period. In the first case, a colored woman, age 34, with large fibroids and pelvic inflammatory disease, the cervix was left in because of so-called technical difficulty; however, this cervix was later removed vaginally at a second operation with ease. We are of the opinion that had the surgeon been a little more persistent in his efforts, a total hysterectomy could have been performed without jeopardizing the patient's life. In the second case, a colored woman, age 17, with large bilateral tuboovarian abscesses, the surgeon gave shock as his reason for not removing the cervix. It is interesting to note that after shock had successfully been combatted, an incidental appendectomy was performed. Certainly in this case total hysterectomy could have been performed without increasing the risk to the patient.

As previously stated in this report, there were 9 cases of early cancer discovered on routine histologic examination of tissue removed at the time of operation. In 5 cases intraepithelial cancer of the cervix was discovered. This is an important finding as biopsy of these cervices had previously failed to uncover the malignancy (Table 5).

TABLE 5

HYSTERECTOMY
TULANE UNIT—CHARITY HOSPITAL
July 1950-July 1952
CARCINOMA FOUND

Location	*Type*	*No. Cases*
Cervix	Carcinoma in Situ	5
Endometrium	Adenocarcinoma	2
Ovary	Papillary Cyst Adenocarcinoma	2
Total		9 1.48%

Among the 745 cases in this two-and-a-half-year period, there were 4 deaths. No deaths were encountered in which vaginal hysterectomy was performed.

In the 511 total abdominal hysterectomies performed, there were 4 deaths. No deaths occurred in the 2 cases in which supravaginal hysterectomy had been performed.

If total hysterectomy had been performed in the 2 cases where the supravaginal procedure was utilized, and had both these patients died as the result of this, a mortality figure of 1.10 per cent would have resulted, which is comparable to the rate encountered in the period 1946-1951, where only 93 per cent of the abdominal hysterectomies were of the total variety. This comparison is controlled as the same physical facilities, anesthesia, and practically the same staff were present in both groups, as were blood banks, antibiotics, and other chemotherapeutic agents. In not one of the 4 deaths reported in this series could the procedure of total hysterectomy be held accountable for the patient's demise.

The first death was that of a colored female, age 63, admitted with findings and symptoms of acute pelvic inflammation. A cul-de-sac puncture was done, followed by a colpotomy several days later. A cheesy material was obtained in both instances. On the 12th day she was operated on, and a total abdominal hysterectomy and bilateral salpingo-oophorectomy was performed because of a ruptured dermoid cyst. A diffuse peritonitis of the chemical type was present. This patient expired on the 33rd postoperative day as a result of peritonitis. No autopsy was obtained.

The second death was that of a colored woman, age 69, who was admitted with an acute abdomen and acute myocardial failure. She was operated on by the surgery department through a transverse abdominal incision at the level of the umbilicus. She was found to have degenerating fibroids and a ruptured tubo-ovarian abscess. Members of our gynecology staff were called, and a total abdominal hysterectomy and bilateral salpingo-oophorectomy was effected. She expired on the 3rd postoperative day, apparently the result of myocardial failure. No autopsy was obtained.

The third death occurred in a 34-year-old colored patient operated on for large fibroids and bilateral tubo-ovarian abscesses. Postoperatively she developed peritonitis and a wound disrupture on the 10th day. She died 2 days after secondary wound closure. Autopsy revealed peritonitis and multiple abscesses of the kidneys.

The fourth death was a 56-year-old colored woman who had a hysterectomy and bilateral salpingo-oophorectomy because of degenerating large fibroids and tubo-ovarian abscess. She developed peritonitis and a vaginal vault abscess which was drained. She died on the 24th postoperative day. Autopsy revealed annular carcinoma of the sigmoid.

This study at Charity Hospital and experience in my own private practice indicate that it is possible to perform total hysterectomy in every instance that requires removal of the uterus. This is true in all cases, irrespective of pelvic pathology or severe medical complications present. The mortality in this series compares favorably with that of all series reviewed. Since 1939 we have reduced our incidence of supravaginal hysterectomies from 40.4 per cent of the 629 abdominal cases, as reported by Miller and Prejean, to .39 per cent of the 511 abdominal cases reported from the Tulane service at Charity Hospital for the period July, 1950, to January, 1953. A concomitant decrease in mortality is noted as the number of supravaginal procedures decreases (Table 6). During the past 5 years in my private practice, I have performed 206 total abdominal hysterectomies and during this period have not done a supravaginal hysterectomy. The mortality in this group has been zero.

TABLE 6

ABDOMINAL HYSTERECTOMY
TULANE UNIT—CHARITY HOSPITAL

Period	*Tot.*	*Mort.*	*Supra-Vag.*	*Mort.*	*All Cases*	*Mort.*
Jan. 1939-Jan. 1940	374	1.33%	255	2.75%	629	1.90%
Jan. 1946-Jan. 1951	1,436	.63%	110	5.45%	1,546	.96%
Jul. 1950-Jan. 1953	509	.78%	2	0%	511	.78%

We do not believe that surgery is contraindicated because of cardiac status, obesity, hypertension, kidney disease, diabetes, or other complicating conditions in the patient having symptomatic benign pelvic pathology. These complicating factors, however, were adequately controlled before the patient was subjected to surgery. Therefore, this two-and-a-half year series represents a totally unselected group of patients. We realize that the dictum we followed on the Tulane service at Charity Hospital is contrary to general teaching. However, we believe that our results, particularly as to mortality and morbidity during this period, justify a continuance of this policy.

The complications that commonly follow this procedure are as follows: Urinary infections, as noted, head the list. This complication is one that is most difficult to prevent, but fortunately seldom becomes a serious one. Routine use of indwelling catheters is not recommended, but where catheterization becomes necessary, it is advisable to use one of the sulfonamide drugs or antibiotics in an attempt to prevent infection. We use indwelling catheters only where extensive anterior vaginal wall plastic has been done. One must also remember the importance of controlling residual urine in the bladder, for its presence often leads to infections that otherwise would not occur. Vaginal cuff hematomas and abscesses, along with abdominal wall hematomas and abscesses, comprise the second most common group of complications. The prevention of hematomas can be con-

trolled only by careful hemostasis. The incidence of vaginal cuff abscesses can probably be decreased by use of antibiotic vaginal suppositories pre- and postoperatively. There is no doubt that morbidity can be reduced by routine use of such suppositories. Vascular complications are rather infrequent, possibly because of better technique with less damage to important structures, use of antibiotics to control infections, and early ambulation to promote circulation (Table 7).

TABLE 7

HYSTERECTOMY
TULANE UNIT—CHARITY HOSPITAL
July 1950-July 1952
POSTOPERATIVE COMPLICATIONS

URINARY		
Retention and Infection		85
URINARY TRACT INJURIES		2
Bladder	1	
Ureter	1	
HEMORRHAGE		1
Vaginal Cuff	1	
VASCULAR		2
Vena Cava Ligation	1	
CUFF		17
Abscess and Hematoma		
WOUND		18
Abscess and Hematoma	15	
Evisceration	3	
PULMONARY		5
ILEUS AND OBSTRUCTION		6
PAROTITIS		1
NONE		401
PATIENTS WITH PHYSIOLOGICAL MORBIDITY		74

As we mentioned earlier, abdominal and vaginal hysterectomy should not be considered competitive in any respect. The ability to perform proper vaginal surgery is the dividing line between the general surgeon and the gynecologist. Most authors writing on vaginal hysterectomy emphasize that this operation is a safe procedure in the hands of experienced vaginal operators. Most authors also quote Dr. Sproat Haeney[5] who, in his discussion on vaginal hysterectomy in 1949, stated, "It is interesting to note that those who persist in perfecting themselves in the technique of vaginal hysterectomy gradually disregard more and more of the contraindications so insistently laid down by those with little or no familiarity with the operation." There is no question that this statement adequately describes the experience of many gynecologists.

We at Tulane feel that the vaginal approach is preferable where removal of the uterus is indicated. We do not require any special degree of prolapse but do require that the cervix and uterus itself be mobile. We prefer that some degree of relaxation of the vaginal supporting structures be present, but this point is not too strongly stressed, as the operation can often be done with little difficulty in a nulliparous individual. We feel that vaginal hysterectomy has no place in the treatment of carcinoma of the cervix or fundus.

There is no question that the vaginal approach is a safer procedure when surgery is necessary in an aged individual, and also in those having systemic medical disabilities. No one can deny that the vaginal approach carries the possibility of shock far less than that of the abdominal, the anesthesia is usually shorter, ileus seldom occurs, adhesions do not occur, and the patient often has a smoother and shorter convalescence.

We also feel that adnexal inspection should be carried on routinely and any adnexal pathology adequately dealt with through the vaginal approach. We feel that the main contraindications to vaginal hysterectomy are fixation of the uterus by pelvic inflammatory disease, or endometriosis, the presence of carcinoma of the cervix or fundus. May I again state that we do not advocate morcellation vaginally of large uterine fibroids, feeling that the abdominal approach in such instances is by far the safest procedure.

Broadly speaking, vaginal hysterectomy should not be used in instances where it would defeat its own purpose by introducing the added factor of trauma; there must always be sufficient space for the operative manipulations, and it must be possible to bring the uterus down freely. Using the technique in which the utero-sacral and cardinal ligaments are first severed from their attachment to the uterus, is often all that is needed to bring this organ well down into the vaginal canal, thus facilitating the operation.

We have recently reported on 2,588 hysterectomies, performed on the Tulane Gynecological Unit at the Charity Hospital of Louisiana at New Orleans, during a period from January, 1946, to July, 1952. There were 697 vaginal hysterectomies in this group, which is an incidence of 26.9 per cent. There were 2 deaths in this vaginal group, or .29 per cent. During the past 2 years on the same service, 62 per cent of the hysterectomies on white patients were done vaginally with no deaths (Table 8).

TABLE 8

HYSTERECTOMY
TULANE UNIT—CHARITY HOSPITAL
Jan. 1, 1946-July 1, 1952

	No. Cases		*Deaths*	*Mortality*
Vaginal	697	(26.9%)	2	0.28%
Abdominal	1,891	(73.1%)	17	0.89%
	2,588	(100. %)	19	0.75%

Since beginning private practice, I have performed 452 hysterectomies. In this group there were 173 vaginal hysterectomies, which is an incidence of 38 per cent. During the past 2 years this percentage has been increased to 50 per cent. There have been no deaths in this group of 452 hysterectomies.

CONCLUSIONS

Hysterectomy performed either by the abdominal or vaginal route is a comparatively safe procedure when done by the trained surgeon.

Total hysterectomy is the procedure of choice, because with removal of the cervix the common postoperative sequelae, such as pelvic pain and vaginal discharge, are eliminated, and the hazard of cervical cancer is removed.

It is possible to perform total hysterectomy in every instance that requires removal of the uterus. We do not believe that surgery is contraindicated because of cardiac status, obesity, hypertension, kidney disease, diabetes, or other complicating factors in the patient having symptomatic benign pelvic pathology. These complicating factors, however, must be adequately controlled before the patient is subjected to surgery.

During the past 10 years we at Tulane have reduced our incidence of supravaginal hysterectomy from 40 per cent, as reported in 1942, to .39 per cent in the group performed during the period July 1, 1950, to January 1, 1953. A concomitant decrease in mortality has also been noted as the number of supravaginal procedures decreases.

We realize that the dictum followed on the Tulane service at Charity Hospital since July, 1950, is contrary to general teaching. However, we believe that the results, particularly as to mortality and morbidity, justify a continuance of this policy.

Vaginal hysterectomy well deserves its increasing position in importance because of its relative safety and excellent end results.

Hysterectomy, however, is a procedure that should never be undertaken lightly or inadvisedly. It should be done only when one is certain that no simpler method of relief is possible and the end results justify its performance. By following these basic principles, one will never be guilty of unnecessary surgery.

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Three and a Half Years Experience With a Bone Bank

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We have had a bone bank in operation at St. Francis Hospital, Wichita, Kansas, for three and a half years now; and, although it is not practical or even advisable for most hospitals about the state to have such a facility available, it would seem wise for all physicians to be familiar with the technique and uses as well as the necessity and authority for a bone bank. It is with this thought in mind that we would like to report regarding our experience over the past three and a half years.

The necessity for additional bone for certain orthopedic operations has presented itself to surgeons on many occasions for as long as this type of surgery has been done. In certain patients, notably children, it is difficult or impossible to obtain amounts of bone to complete the operation in question by the usual means, i.e., with the aid of secondary operation on the patient himself or upon a bone donor, which is usually the father or mother of the patient. We have thus used homogenous bone for some time, but only for a short time have we had a method of preserving bone formerly discarded. Operations, such as spinal fusions for scoliosis or the filling of a large bone cyst, for example, present problems in which a large quantity of bone is necessary and may not be obtainable from the patient himself.

Although the use of homogenous bone was first reported as early as 1878, it was not until 1942 that Alberto Inclan of Havana, Cuba, reported on the use of a preserved bone graft in orthopedic surgery. Alan DeForest Smith of New York City employed bone refrigerated for 18 days at about plus 2° to plus 5° centigrade in 1942, but did not report this fact. It was not until 1945 that a bone bank was first used at the New York Orthopedic Hospital. At the onset, bone which was formerly discarded in many operations was placed in an ordinary refrigerator at plus 2° to plus 5° centigrade where it was kept for periods of up to three weeks. This was shortly changed to a freezer type storage at minus 20° to minus 30° centigrade, where it was found bone could be kept for an indefinite period of time and used with good results. Undoubtedly, the rapid advance in manufacture of deep freeze equipment has tended to give impetus to the present-day use of preserved homogenous bone grafts.

I might mention here another method of storing bone which could have been utilized, i.e., the placing of the bone to be preserved into an aqueous merthiolate solution. This bone may be used without undue

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complications. However, this method is much more complicated, requiring frequent changing of solution and handling of the bone. Also, it means introducing a foreign, toxic substance into the operative wound.

Late in 1949 a "deep freeze" was obtained at St. Francis Hospital, Wichita, Kansas, and on January 3, 1950, our first entry to the bone bank was made. It so happened that our first bone was obtained from a 16-year-old boy who had experienced a sudden, traumatic death. Bone from a cadaver, removed within a few hours after death under surgical aseptic conditions and placed in the freezer, can be utilized just as well as bone removed from a live donor and placed in the bank. Other bone for our bank has come from the following sources:

1. Cadaver—tibia, fibula, ilium.
2. Ribs from non-infected and benign thoracotomy cases.
3. Amputations—tibia, fibula, os calcis, astragalus, and metatarsals.
4. Ilium.
5. Clavicle.
6. Patella.
7. Ulna.
8. Boiled bone from any of the previously-mentioned sources.

In all of these cases, the bone saved in the bank represented bone which would formerly have been discarded. When bone is placed into the bank, which is maintained at about minus 20° centigrade, the following data is obtained: the donor's name, his age, his serology report, the name of the doctor supplying the bone, and the type of bone. Formerly we obtained the blood type and the RH type; however, we, as well as other users of the bone bank, have found this information unnecessary. The bone is placed within a sterile jar, which is placed inside of another sterile jar. The bone is cultured in a brain broth preparation which is placed in an incubator for a period of not less than two weeks. Thanks to our laboratory and their careful checking of these cultures, we have yet to encounter our first case of postoperative infection following the use of bank bone. We have had to discard bone—yes—but we have never had an infection.

Upon withdrawing bone from the bank, the following data is entered on our records: the recipient's name, the type of operation being performed, and the date.

The bone obtained from the first donor is all gone now; however, there were several pieces used after being in the freezer for 18 months. The bone which had been in the freezer for 18 months was used with clinically as good a result as with any other bone used. This represents the successful use of bone stored longer than any other case reported to date.

On some operations, several bottles of bone have been used, and in other cases a portion of the bone from one bottle has been used, the remainder being recultured and returned to the bank. Every time a bottle of bone is opened and returned, it is recultured. The contents of one bottle, which incidentally was the first entry, was used on seven different operations. No apparent harm to the bone results from the thawing and refreezing procedure.

Number of entries	190
Sterile entries	155
Contaminated entries discarded	32
Contaminated entries boiled and used	3
Number of operations in which bone bank used	160

Bone from the bank has been used in a great variety of operations to make up this total of 160 operations. The following is a fairly complete list:

Filling of bone cysts	11 cases
Congenital pseudoarthrosis of tibia	6 cases
Construction of hip shelf	4 cases
Spinal fusion	103 cases
a. Scoliosis, 47 cases	
b. Spondylolisthesis, 27 cases	
c. Others, 29 cases	
Fractures	8 cases
a. Fresh	
b. Nonunion	
Arthrodesis of various joints	10 cases
Used in other hospitals	10 cases
Others	8 cases

Although other writers have proved autogenous bone to be superior to homogenous or bank bone, clinically the bone used for our bank has accomplished its intended function as well as autogenous bone grafts. It has been tolerated by the host tissue in all cases, and there have been no cases of slough or infection. We have been able to successfully complete certain procedures with ease that would have been impossible or done at great risk and difficulty without bank bone.

In conclusion, it can safely be said that the development of the bone bank is one of the most important advances in orthopedic surgery; however, it should be emphasized that the use of bank bone is not intended to replace the use of autogenous bone but is to serve as an adjunct in grafting when it is impossible or impractical to obtain enough bone from autogenous sources.

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A Venereal Disease Epidemiologic Study in Kansas City, Wyandotte County, Kansas

Le Grand B. Byington, M.D.,* and Harry Wettig, Jr., A.B.**

Kansas City, Kansas

Recognizing the need for more efficient contact interviewing and contact investigation in venereal disease control, the Kansas State Board of Health, in co-operation with the University of Kansas Medical Center and the Kansas City-Wyandotte County Department of Health, conducted a special school for public health nurses during the first five months of this year. Nurses from the state of Kansas were given training in venereal disease case finding techniques. The assistance of a health program representative from the United States Public Health Service was obtained to aid in this program. The purpose of this paper is to illustrate what can be accomplished through thorough contact interviewing and prompt investigation.

During the past several years the Kansas City, Wyandotte County, area has noted a steady decrease in reported early syphilis infections. In 1952, eight cases of primary and secondary syphilis were reported in this area. Two of these persons, 20 years of age, were white. The ratio of sexual contacts obtained per patient interviewed was 1.2 per patient, as compared to a national average of 3.5 contacts per patient. Investigation of these contacts resulted in the examination of 48 per cent of those named.

In the first five months of 1953, the reported incidence of early syphilis has more than tripled. At the end of May, a total of 28 cases of primary and secondary syphilis had been reported in this area. It is interesting to note that 68 per cent of these are between 13 and 21 years of age. Interview of these patients obtained the names of 4.5 sexual contacts per patient interviewed. Of the investigations complete at this writing, 87 per cent of these named contacts have been examined.

The epidemiological chart shown here is a typical result of thorough contact interview and investigation in white teenagers of Kansas City, Kansas, from January through May, 1953. The center of this chart is a white female, age 17, Case 5. This patient was found infected with secondary syphilis after being named as a sexual contact of four boys, all infected with primary syphilis. She gave the names of 23 other teenage boys, admitting that these were "the only ones I can remember by name." All but one of her contacts have been located and placed under observation. Nine have been placed under treatment for primary syphilis, and one is under treatment for secondary syphilis.

Further investigation led to the location of a white female, age 21, Case 7, who was placed under treatment for secondary syphilis. This girl named eight sexual contacts ranging in age from 16 to 37. Her husband (11) and two other contacts were found infected with primary syphilis. Investigation discovered that Case 12 was reportedly touring Nebraska. The authorities there were notified on Monday, and on Tuesday night this boy was given initial treatment and advised to return to Kansas City to complete treatment for primary syphilis.

This epidemiologic chain has extended to Kansas City, Missouri, where two infections have been found. Case 6 was placed under treatment for early latent syphilis, and her six Kansas contacts are under observation. Case 8 was placed under treatment for primary syphilis, and his three Kansas contacts are under observation. One of these contacts had recently received penicillin for another complaint, and therefore it will be necessary to extend the period of observation to one year.

Completely isolated, at this time, from this chain of infection, is a 13-year-old white female, Case 19. This patient, complaining of numerous lesions of the genital area, was placed under treatment for secondary syphilis. Of her five sexual contacts, three have been examined and are not infected. We have been unable to locate the other two contacts. The source of her infection is still unknown.

The development of this epidemiologic chart is the result of efficient interview and prompt field investigation. From the 16 cases under treatment in Kansas City, Kansas, 64 contacts were obtained. All but three of these have been located and placed under observation. Infected contacts were found early in the primary or secondary stage, before they were able to infect many other people. It would be interesting to consider how many additional infections were prevented through early location and treatment of those who were infected, as shown by the chart. Such prompt investigation is possible only when the physician who diagnoses the case makes immediate

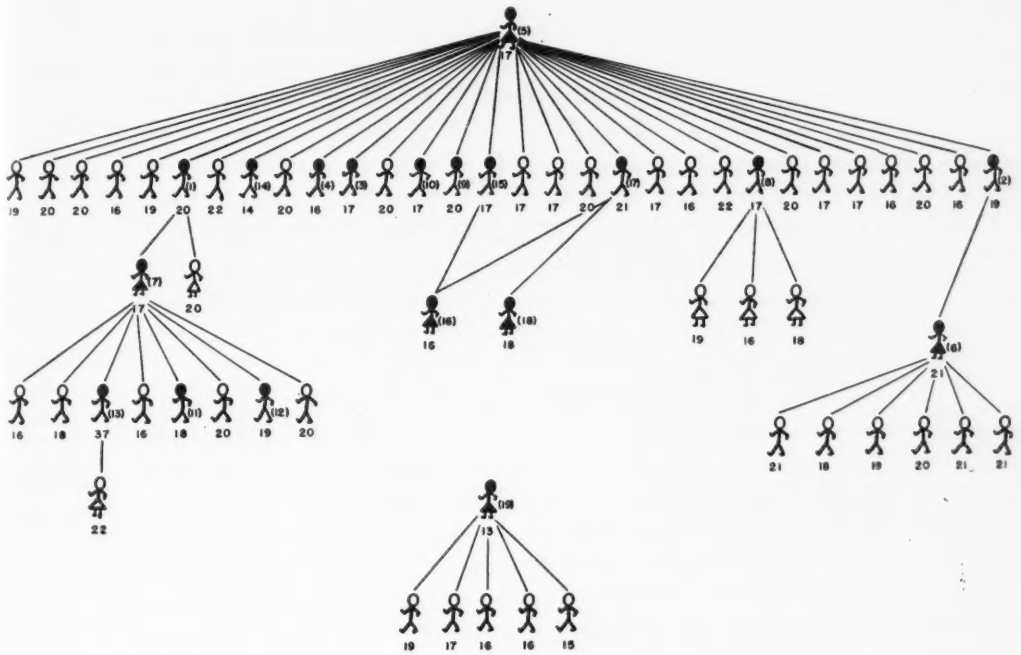
* Director, Kansas City-Wyandotte County, Kansas, Department of Health.
** Health Program Representative, U.S.P.H.S.

use of the epidemiological services available to him. Persons skilled in contact interview and investigation are available from the state and local departments of health to talk with the private physician's patient who is infected with early syphilis. The department of health and the private physician can therefore work to reduce the incidence of early syphilis in our teenage population, and the patient can be encouraged to complete treatment under private practitioners or at the health department, as the physician desires.

EPIDEMIOLOGICAL STUDY OF EARLY SYPHILIS

AMONG WHITE TEENAGERS IN KANSAS CITY, KANS.

JANUARY THROUGH MAY, 1953



Early Syphilis Cases

Contacts - Negative Diagnosis

(5) Case Numbers

17 Age of Person

Kansas City - Wyandotte County

Health Department

Kansas City, Kansas

Silence is one great art of conversation. He is not a fool who knows when to hold his tongue; and a person may gain credit for sense, eloquence, wit, who merely says nothing to lessen the opinion which others have of these qualities in themselves. —*William Hazlitt*

PRESIDENT'S PAGE

No doubt you often muse as you drive along on the way to make a call as to why doctors and medical societies should interest themselves in economics and politics. I think that we can simply answer this by saying that it is a natural evolution that has become necessary to keep in pace with the "changing times."

In its inception, the primary purpose of a medical society was the dissemination of scientific information. But as civilization has advanced and society has become more complex, the problems facing medicine have also developed many facets. Certain of these entries are purely at our own instigation. For instance, through study and experience, we believe and advise our patients that certain rules and regulations should be made to safeguard the public from epidemics, industrial hazards, charlatans, food poisoning, etc. Thus we gave birth to the Board of Health, and we gave it a legal status by having it incorporated in the laws of our state. We have asked for and have obtained a medical practice act.

Both of these have two basic premises: (1) An entirely altruistic premise for the protection of the people of our state and country. (2) The other premise, entirely unselfish, is the jealously guarded and ever elevated standard of medical education and medical practice. We have valiantly defended and fought for the principles in which we believe. I trust and hope that we will always valiantly fight for those principles.

Thus we have voluntarily thrust our foot in the door of politics and economics. We will never be able to withdraw that foot if we expect to survive and to maintain our rightful position in the sphere of society.

EDITORIAL COMMENT

The Physician's Role in Adoptions

Editor's Note. The following editorial was prepared for the JOURNAL *by David E. Gray, M.D., chairman of the Committee on Maternal Welfare of the Kansas Medical Society.*

Recently the Committee on Maternal Welfare met with representatives of various private and public child placement agencies in an effort to become more familiar with their problems. Obviously, these agencies have many activities of no immediate concern to this committee, but it was felt that certain points of discussion regarding the placement of newborn babies warranted more general dissemination.

Any physician who performs deliveries is certain to be approached sooner or later by some couple hoping to gain his co-operation in obtaining a baby for adoption. The agencies have long felt that the physician who assumed such an obligation was unwise, if not actually performing an illegal act, in so doing. The committee attempted to balance the factors on both sides and arrive at some recommendations.

Without doubt, the peculiar and apparently insoluble core of the problem is the great disparity between demand and supply, currently estimated at about ten to one. So long as the reproductive process continues at its present long and somewhat haphazard course, there can never be enough children unwanted by their natural parents to gratify the desires of prospective adoptive parents. Immediately, then, the available supply is subjected to the same pressures as any other scarce commodity in the market place. This very situation produces many of the criticisms leveled at placement agencies and should warn physicians not to consider themselves omniscient where passing out babies is concerned. In couples seeking children, it is this shortage which brings about the frustrations and antagonisms they direct toward the agencies. So, they contact the physician with complaints of delay, procrastination, and "unnecessary" investigations. They present a strongly emotional case for by-passing such "red tape" and precipitate a conflict between the physician and the agencies, where there should be mutual assistance and co-operation. It is this great demand which prompts the agencies to adopt a policy of caution and exhaustive investigation before placing a child.

The complaint that a long period of time elapses between application and placement should be no complaint, according to the agencies, because it is a means of protecting the prospective parents and the child as well, a precaution Mother Nature does not always take. The adoptive home is studied in all of its aspects. Adequate background information is obtained on the natural parents, which is of value in the prognosis of the infant. Only rarely, if ever, will the individual physician be in a position to determine all aspects of the situation as well as the agency can.

The objection is raised, then, that natural parents take their chances, and certainly the offspring has nothing to say about his natural parents. Why must adoptive parents and babies be surrounded by this "unnatural" exploration and study when they, the former at least, would be willing to assume a certain risk in the results? Such are the ways of life, say the agencies, and they are the first to point out that adoption is an unnatural process which should be strictly and cautiously executed. So long as the responsibility is theirs, it is only wise that they respect that responsibility to the greatest degree, not disregard it for some expedient based on emotion or financial remuneration.

Placement agencies, by covering a wide territory, can avoid one common source of trouble, the placement of a baby in the same community as the natural parents. The objection to this situation is obvious, yet this frequently results when the physician places a child directly. No mother can sign her child over to adoptive parents legally without their names appearing on the release, and, unless the procedure is pursued illegally, she then knows where her baby is going. In agency transactions, the baby is assigned to the agency, keeping the personalities completely apart. The agency's investigation insures that both natural parents give complete and legal permission for the adoption and, further, that both adoptive parents are wholeheartedly in accord with the plan and are not likely to change their minds.

A physician can usually offer the natural mother one advantage which the various agencies cannot. Through him, the adoptive parents are glad to defray part or all of the hospital and professional charges. No agency is sufficiently well off at the moment to meet this challenge. This, however, is the point of maximum vulnerability for the physician since such a practice, however innocent and legitimate, inspires lurid "black market" charges in the Sunday supplement.

The physician is motivated primarily by his desire to be of assistance, either to the mother or to the adoptive parents, or to both. If he could offer the same assurance of control and eventual success in all areas of the procedure as the agencies can, there could be no objection to his activities. Insofar as he cannot offer that assurance, he fails to fulfill the responsibility he has assumed and invites grief and

dissension where he intended to bring happiness and harmony.

Locally, at least, the agencies have admittedly failed in one phase of their endeavor. That is in acquainting physicians with their methods, standards, and procedures and thus encouraging the co-operation of the medical profession. The committee, therefore, decided to take this means of presenting these points which the average physician may have overlooked. It has urged the agencies to keep the profession better informed of their assistance and services to the mother, the child, the adoptive parents, and the physician. Those physicians who may meet such problems are similarly urged to watch for and give adequate attention to any information releases originating from these agencies.

License Renewal

The third of a series of editorials on legal subjects concerning the practice of medicine relates to the annual renewal of a license. This procedure is so simple that the requirement is sometimes overlooked, which could result in serious consequences. For that reason, and because of a change in the law, this subject is discussed in this issue.

Once the so-called permanent license to practice medicine and surgery in Kansas has been obtained, there remain two important requirements that must be met if such license is to be kept valid. The first of these needs to be performed only once at the beginning of each location of practice, while the second is required annually. Failure to comply actually nullifies the license and might well create a situation where malpractice insurance is of no effect. Moreover, the responsibility for carrying out these requirements rests with the individual.

The first requires that each license shall be recorded within 30 days after its issuance, in the office of the county clerk of the county in which the physician resides. In case of a non-resident of this state, such record shall be made in the office of the clerk of the county in which he expects to practice. The cost shall not exceed one dollar. Once that has been accomplished, it need not be repeated except in case of relocation in a different county.

Of only passing interest to the physician, this law further states that the list of such certificates shall be a matter of public record and open for inspection during regular business hours in the office of the county clerk. He is also required, between the 1st and the 20th of December in each year, to furnish the secretary of the Kansas State Board of Medical Registration and Examination a complete list of the names of all physicians whose licenses are recorded in his office and the names of those who moved out of the county or who have died during the year.

The consequences of a physician's failure to comply with this law are important, however, and appear in the General Statutes of Kansas, 1949, in Chapter 65, Section 1003. In this paragraph will be found the above mentioned requirements and a further significant statement. The physician shall be responsible for having this done and "...until such certificate of license is recorded he shall not exercise any of the rights or privileges therein conferred."

The second problem concerns the annual renewal. Physicians often speak of a permanent license in contrast with a temporary permit. While that distinction is valid, it is not strictly accurate in that the permanent license is issued for only one year. It is true that renewal is automatic if accomplished within the required time, but it is also true that the license is of no effect unless this law is complied with. This also becomes the responsibility of each individual physician, and neglect can result in the physician practicing without a license and being unaware of that fact.

The 1953 Kansas legislature changed this portion of the medical practice act, so a section of the General Statutes of 1949 on this subject will be incorrect. This will ultimately appear in the 1953 supplement, but for now may be found in Chapter 288 of the 1953 Session Laws of Kansas. Again it involves Chapter 65, and this time Section 1004a. The only change establishes an increase of the renewal fee which was one dollar and now reads "not to exceed five dollars." The actual amount shall be set by the board and for this year remains at one dollar.

This law states that the secretary of the Kansas State Board of Medical Registration and Examination shall send a written notice on the first day of July in each year "to the last known address of every holder of such certificate within this state." This shall contain a notice that the renewal is due and the amount required. The important feature of this section is that the secretary is not required to send a second notice, nor need he attempt to locate physicians whose notices are returned because of address changes. In other words, the physician is responsible for the renewal of his license whether or not he receives a reminder. Incidentally, the work of the secretary of this board could be made much easier if every license holder notified him whenever the doctor changed his address.

The next item of importance is that renewal is assured if the fee is received on or before the 1st day of October. The doctor, therefore, has three months in which to get this done, but in case of delay several results might apply. First, a penalty is added by law. The renewal fee paid after October 1 becomes

$10, and, secondly, renewal will be granted only "if satisfactory proof at that time is submitted of his moral fitness."

Of more interest to the physician is that if the renewal fee is not paid by October 1 of each year "...said secretary shall strike from the register the name of such holder..." which can only mean that the doctor who practices under such circumstances is practicing without a license. As said earlier, a provision is made to correct this neglect on his part, but the danger to the doctor who practices without a license cannot be overemphasized. Therefore, if it has not already been cared for, this renewal fee should be sent immediately to O. W. Davidson, M.D., Secretary, Kansas State Board of Medical Registration and Examination, 864 New Brotherhood Building, Kansas City, Kansas.

Life, Liberty, and the Pursuit of Happiness

Once, a very long while ago, a group of pioneers established a code for freedom. It happened in 1776, to be exact, and the location was a wilderness that ultimately became the United States of America. Their manuscript was a battle cry presaging storm and stress but, with the victory, a golden era of prosperity arrived to make the story read like a fairy tale.

And, as in the fairy tale, we awake to find it isn't true. It was true once, a soft, pleasant, dreamy truth that evaporated so silently we didn't miss any of its parts until all had disappeared. And then? And then we spend our time in nostalgic recollection of the days that used to be.

Those were the days of knights in shining armor and of dragons. Heroic battles raged, fierce encounters shook the hilltops, but the hero won over his adversary or died advancing. His creed was easy to believe in. He gave his life, if needed, to prevent the compromise of truth.

Truth almost always won. It won the dramatic episode following 1776 when these pioneers wrote into the Declaration of Independence that all mankind was entitled, among other things, to Life, Liberty, and the Pursuit of Happiness. It built the greatest nation ever to exist upon the face of the earth. It brought prosperity and the highest standard of living ever known to man.

Today this appears to have happened in a dream. There was no violence, no explosion, no storm. The fairy tale just disintegrated, and we stand in a strange, harsh world bewildered and unfamiliar in our new surroundings. A little ashamed of ourselves, we are, because our hearts yearn for what we remember, but public opinion forbids us to turn back.

So in that way the final battle is lost forever. The most amazing part is that the ultimate victory was not a war at all. It came silently and in stealth. It was the crushing weight of mediocrity that annihilated truth. This force conquered because we forgot to strive for achievement. We lost our joy in conquest. We compromised with truth. We standardized our lives, and the average became our king.

The average must always be confusion, an unnatural compromise—half truth and half a lie. It can never completely accept any honest stand nor ever completely stamp it out. So, having denounced the only truth we ever knew, having turned our backs on what we call a fairy tale, we find ourselves hopelessly wheeling within a void without a goal, without a course to steer by.

But look! All this is crying to call back a dream. Who are we to sweep against the tide? Or can we even yet?

SERVICE SEPARATIONS

As a service to physicians and communities in this state desiring additional medical personnel, the Journal of the Kansas Medical Society will publish in this column each month the names of medical officers who will shortly be separated from the armed forces. These are men who volunteered from Kansas, and many of them will probably be interested in finding locations in this state. Anyone interested in contacting these physicians may write to the address here given.

James E. Crockett, M.D.
1919 Olathe Boulevard
Kansas City, Kansas

Albert F. Crumley, M.D.
619 North Main
Ottawa, Kansas

William T. Holland, M.D.
Winter VA Hospital
Topeka, Kansas

Warren L. Krump, M.D.
312 Northeast Avenue
Oberlin, Kansas

Lester E. McGonigle, M.D.
Potwin, Kansas

John W. McKay, M.D.
3916 Willow Drive
Wichita, Kansas

William S. Mowrey, M.D.
Luray, Kansas

Richard V. Polson, M.D.
722 South Grove
Wichita, Kansas

Marion A. Throckmorton, M.D.
1026 Perry
Wichita, Kansas

Richard N. Todd, M.D.
916 West Pine Avenue
El Dorado, Kansas

Progress in Health Insurance

The American Medical Association has recently published a pamphlet analyzing and discussing the various physician sponsored insurance plans in the United States. This provided material for a review of Kansas Blue Shield which has not appeared in this publication for some time and may contain information which has been forgotten by the profession of this state.

Voluntary health insurance has grown rapidly in the United States since 1940. Before that time, a few small ventures were tried in the Pacific Northwest. Six new plans came into existence in 1940, and, by the end of 1952, there were 83 health insurance programs approved by medical societies in the United States. Growth in enrollment is even more dramatic because, at the end of 1945, there were still less than 3,000,000 people insured. At the end of 1952, the total had grown to 27,686,575. This, it should be understood, includes only the medical society sponsored plans. It does not count the many more who are insured for similar benefits with commercially operated companies.

It is of interest that approximately half these plans present a combination of service and cash indemnity programs. Almost exactly one-fourth offer service only and one-fourth cash indemnity only. Another table presents the story of disbursements. As an example, the lowest rates listed by any such program show that 65 per cent of the premium is spent for services rendered. The highest is 90 per cent. There are numerous reasons for this wide difference, such as the fact that new programs will always have a lower claim rate in the beginning because of waiting periods, etc. The average, however, was 78.6 per cent. The average for administrative expense was 11.05 per cent of the gross earned income. Here also there is a considerable range, beginning with a low of 6 per cent to a high of 26 per cent.

National coverage is now offered on a geographical basis. There are voluntary health insurance programs sponsored by medical societies available in all areas of the United States. During the time of the greatest expansion, in fact early during that period, this state organized Kansas Physicians' Service with home offices at 603 Topeka Boulevard, Topeka, Kansas. The one person to whom much of the credit for a successful beginning must be given is Barrett A. Nelson, M.D., Manhattan, who spent innumerable hours studying this problem and advising the profession of Kansas concerning its many aspects, and who became its first, dynamic president. Today the president is Henry S. Blake, M.D., of Topeka.

Kansas Physicians' Service, now known as Blue Shield, was organized in December of 1945 under a special enabling act passed by the Kansas legislature early in that year. The first services began in January, 1946. It was organized and sponsored by the Kansas Medical Society and has continued to be among the major projects of this organization since its beginning. The governing body consists of 21 directors, of whom 18 are physicians and 3 laymen. The area covered is the entire state except for Johnson and Wyandotte counties. The last two were excluded because of their previous engagement in another similar program involving the Greater Kansas City area.

The type of contract here is a combination of service and cash benefits. Persons at any income level are eligible to subscribe, but individuals with an income of under $2,000 annually and families with incomes of less than $3,000 are eligible for service benefits. Those with incomes in excess of the above amounts receive indemnity benefits.

There are many other things that might be stated about Kansas Blue Shield, but most significant is the story of the number of persons enrolled as of December 31, 1952. At that time there were 295,106 in the Kansas program. There were in the United States five such programs with 1,000,000 or more enrolled. They were, quite naturally, in the larger states, Michigan, New York, Pennsylvania, Massachusetts, and Ohio. Kansas is among 30 that have more than 250,000 and has shown a continual increase since its beginning.

The Kansas program, along with others, is growing also in other ways than statistically. Kansas physicians have always shown a willingness to experiment with new methods of performing a better service for the public. At present two special committees within the medical society are engaged in projects of this type. An experiment now is under way in providing additional benefits for catastrophic illnesses, and Kansas is among a small group that is working in this area. There are other experiments being carried on throughout the country which are also followed with much interest in this state and may from time to time be adopted into the Kansas Blue Shield program.

In general, the Kansas Medical Society takes pride in its participation in this very large and worthwhile public service project. The program, not yet 10 years old, is, quite naturally, experiencing growing pains. There are many things that need to be improved, but as rapidly as workable solutions can be obtained these improvements become a part of the program. Physicians of Kansas are co-operating in this regard, and, by the very fact of continually increased enrollment, Kansas Blue Shield has demonstrated its usefulness to the citizens of this state.

Carcinoma of the Thyroid: Papillary Adenocarcinoma Occurring in Twins and a Case of Hürthle Cell Carcinoma

Tumor Conference*

Edited by H. I. Firminger, M.D., and F. R. Skelton, M.D.**

Dr. Helwig: Today we have three extraordinary cases, including identical twins with papillary carcinomas developing at the same time and involving the same lobe of the thyroid with metastases to cervical lymph nodes on the same side. Cancer of other organs occurring in twins is familiar to all of you, I am sure, because, being extraordinary, it is usually reported. With what frequency it occurs I do not know, but I am sure it must be very rare. Some years ago, a former professor of pediatrics here had two young girls, twins, who simultaneously developed acute Basedow's disease, but I think these two cases today are even more extraordinary.

Dr. Nesselrode, would you give the histories?

CASE NO. 53-50

Dr. Nesselrode: The first twin was a 24-year-old white nurse who was admitted to this hospital on March 21, 1953. Prior to admission she had noted a couple of enlarged nodes on the right side of her neck for two months, several other nodes for three weeks, and a slight weight loss for one week. There were no symptoms of hyperthyroidism except for occasional paroxysmal tachycardia. A lymph node biopsy on March 18, 1953, was reported as metastatic papillary adenocarcinoma from the thyroid gland. The patient was admitted for a total thyroidectomy and radical neck dissection.

Physical examination revealed a palpable, discrete, non-tender node in the right posterior cervical chain and in the sternoclavicular region. There was a healing biopsy scar on the right side of the neck. The thyroid was not palpable. The blood pressure was 108/60, and the pulse was 88. The remainder of the physical examination was normal and I^{131} uptake was within normal limits. Other laboratory studies were negative.

On March 23, 1953, a total thyroidectomy and right radical neck dissection was performed. The postoperative course was complicated by hypocalcemia and tetany.

CASE NO. 53-51

The second twin was a teacher who was admitted to this hospital on March 24 in no acute distress. After the patient learned that her twin sister had been found to have carcinoma of the thyroid gland, she consulted a doctor who found a similar palpable lymph node in her neck. She was admitted to this hospital for study and treatment.

Physical examination revealed a single, enlarged posterior cervical node on the right side and a palpable right lobe of the thyroid. The remainder of the physical examination was within normal limits. I^{131} uptake was normal, and other laboratory studies were negative.

On March 26 a total thyroidectomy and right radical neck dissection was performed, and the postoperative course was uneventful.

Dr. Helwig: Dr. Boley, would you tell us about the pathological findings in these two cases?

Dr. Boley: The biopsied cervical lymph node in the first case measured 1.3 x 1 x 0.7 cm. and was almost entirely replaced by tumor; only a little rim of lymphoid tissue remained about the periphery. At the subsequent operation, the right lobe of the thyroid contained several white tumor nodules which measured up to 1.5 cm. in diameter. There was also a small white nodule in the left lobe, and lymph nodes on the right side contained white tumor tissue. Microscopically both tumor and metastases were similar in appearance. The greater part of the tumor was composed of acini, often containing colloid, but other parts were predominantly papillary. There was some variation in the morphologic characteristics of the cells. In the right lobe there was blood vessel invasion by tumor. The small nodule in the left lobe also proved to be tumor microscopically.

In the second case, the tumor tissue in the right lobe was found to be more papillary than in the first case. Only occasionally were there acini with colloid. Only one lymph node was found which contained tumor, and this was proved by frozen section at the time of operation.

Dr. Helwig: When one finds papillary, thyroid-appearing tissue in a cervical lymph node, he can't

* Cancer teaching activities aided by a grant from the National Cancer Institute and the Kansas Division of the American Cancer Society.

** Trainee of the National Cancer Institute.

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In general, the Kansas Medical Society takes pride in its participation in this very large and worthwhile public service project. The program, not yet 10 years old, is, quite naturally, experiencing growing pains. There are many things that need to be improved, but as rapidly as workable solutions can be obtained these improvements become a part of the program. Physicians of Kansas are co-operating in this regard, and, by the very fact of continually increased enrollment, Kansas Blue Shield has demonstrated its usefulness to the citizens of this state.

Carcinoma of the Thyroid: Papillary Adenocarcinoma Occurring in Twins and a Case of Hürthle Cell Carcinoma

Tumor Conference*

Edited by H. I. Firminger, M.D., and F. R. Skelton, M.D.**

Dr. Helwig: Today we have three extraordinary cases, including identical twins with papillary carcinomas developing at the same time and involving the same lobe of the thyroid with metastases to cervical lymph nodes on the same side. Cancer of other organs occurring in twins is familiar to all of you, I am sure, because, being extraordinary, it is usually reported. With what frequency it occurs I do not know, but I am sure it must be very rare. Some years ago, a former professor of pediatrics here had two young girls, twins, who simultaneously developed acute Basedow's disease, but I think these two cases today are even more extraordinary.

Dr. Nesselrode, would you give the histories?

CASE NO. 53-50

Dr. Nesselrode: The first twin was a 24-year-old white nurse who was admitted to this hospital on March 21, 1953. Prior to admission she had noted a couple of enlarged nodes on the right side of her neck for two months, several other nodes for three weeks, and a slight weight loss for one week. There were no symptoms of hyperthyroidism except for occasional paroxysmal tachycardia. A lymph node biopsy on March 18, 1953, was reported as metastatic papillary adenocarcinoma from the thyroid gland. The patient was admitted for a total thyroidectomy and radical neck dissection.

Physical examination revealed a palpable, discrete, non-tender node in the right posterior cervical chain and in the sternoclavicular region. There was a healing biopsy scar on the right side of the neck. The thyroid was not palpable. The blood pressure was 108/60, and the pulse was 88. The remainder of the physical examination was normal and I^{131} uptake was within normal limits. Other laboratory studies were negative.

On March 23, 1953, a total thyroidectomy and right radical neck dissection was performed. The postoperative course was complicated by hypocalcemia and tetany.

CASE NO. 53-51

The second twin was a teacher who was admitted to this hospital on March 24 in no acute distress. After the patient learned that her twin sister had been found to have carcinoma of the thyroid gland, she consulted a doctor who found a similar palpable lymph node in her neck. She was admitted to this hospital for study and treatment.

Physical examination revealed a single, enlarged posterior cervical node on the right side and a palpable right lobe of the thyroid. The remainder of the physical examination was within normal limits. I^{131} uptake was normal, and other laboratory studies were negative.

On March 26 a total thyroidectomy and right radical neck dissection was performed, and the postoperative course was uneventful.

Dr. Helwig: Dr. Boley, would you tell us about the pathological findings in these two cases?

Dr. Boley: The biopsied cervical lymph node in the first case measured 1.3 x 1 x 0.7 cm. and was almost entirely replaced by tumor; only a little rim of lymphoid tissue remained about the periphery. At the subsequent operation, the right lobe of the thyroid contained several white tumor nodules which measured up to 1.5 cm. in diameter. There was also a small white nodule in the left lobe, and lymph nodes on the right side contained white tumor tissue. Microscopically both tumor and metastases were similar in appearance. The greater part of the tumor was composed of acini, often containing colloid, but other parts were predominantly papillary. There was some variation in the morphologic characteristics of the cells. In the right lobe there was blood vessel invasion by tumor. The small nodule in the left lobe also proved to be tumor microscopically.

In the second case, the tumor tissue in the right lobe was found to be more papillary than in the first case. Only occasionally were there acini with colloid. Only one lymph node was found which contained tumor, and this was proved by frozen section at the time of operation.

Dr. Helwig: When one finds papillary, thyroid-appearing tissue in a cervical lymph node, he can't

* Cancer teaching activities aided by a grant from the National Cancer Institute and the Kansas Division of the American Cancer Society.

** Trainee of the National Cancer Institute.

be sure that there is not carcinoma in the homolateral lobe or elsewhere in the thyroid, even though he cannot see the lesion grossly. About a year or more ago, I had one that I couldn't find grossly even by careful section of the lobe with a razor blade. After it was fixed, my assistant looked at it and saw a little dimple-like depression of the capsule of the gland. Histologic section of that area showed a lesion just small enough that the entire tumor could be seen under the low power magnification of the microscope. Furthermore, at Memorial Hospital in New York, about the same time that we had this microscopic primary, they reported a small series of thyroid cancer cases[1] where it was necessary to do almost serial sections of glands before they found them. That's probably a shock for the old original idea that some of these arise in the so-called "lateral aberrant component" rather than being primary in the thyroid gland. I think everybody now feels that these "aberrant" thyroid masses are all metastatic, and the lateral component as the primary source has been largely discounted.

What was the relative grade of malignancy of these tumors, Dr. Boley, and how much significance do you attach to vascular invasion in this lymphangial invasive type of papillary carcinoma?

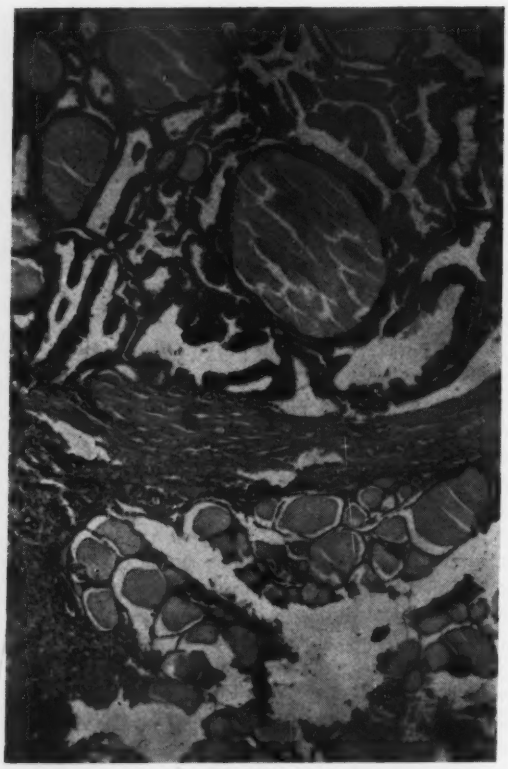

Figure 1. Photomicrograph of the thyroid gland from one of the twins showing the papillary nature of the adenocarcinoma, above, which is separated from the normal thyroid, below. Autoradiogram of a similar area showed marked uptake of I^{131} by the normal thyroid tissue in contrast to almost total absence of uptake by the tumor tissue. Hematoxylin and eosin, X 50.

Dr. Boley: Both tumors were of low grade malignancy. In the first case, if there had been no lymph node metastases or blood vessel invasion, I think it would be difficult to say it was cancer rather than adenoma. In the second case, there was some variation in the papillary parts of the tumor and slight extension outside the capsule. I did not find blood vessel invasion but, as I mentioned, there was one lymph node containing metastatic carcinoma. When one encounters these rather well differentiated tumors, I think it's very difficult to distinguish them from adenomas. Under these circumstances, blood vessel invasion is considered by some[2] as one of the prime criteria of malignancy versus benignancy in such tumors. I have been more or less inclined to rely on blood vessel and capsular invasion, despite the fact that you can have blood vessel invasion with a benign course.[3]

Dr. Helwig: Dr. Robinson, would you discuss these two cases?

Dr. Robinson: The problem in these two young ladies is exceedingly interesting from many standpoints: first, the clinical picture; second, the pathological implications; and third, the undisputed fact that neoplasms in identical twins do occur, and we should be on the lookout for them.

Dr. Max Allen asked me to see the first young lady to do a biopsy on her neck. She had a firm node in the right side of her neck, slightly fixed to the surrounding fascial structures but easily dissected out. We thought at the time that it was neoplastic, but it seemed more like one of the lymphomata. We got back the pathological report, as you heard, and arranged to have this girl admitted to the hospital. It was the very morning she was being admitted that her twin sister stopped me in the hall and said, "Doctor, I don't know about this, but I have a lump in my neck about the same place, and I'd like to have you feel it." So I examined it, and it felt quite the same as had the node in the neck of her sister. We arranged to admit her, too, and did the two operations about three days apart.

Now you might ask, why did we do what we did in the manner that we did it? With a diagnosis of metastatic carcinoma in a lymph node from the thyroid, it's essential that the entire thyroid be removed, except for a very small amount of thyroid tissue. In these cases, a radical neck dissection was also done. They elected to have Dr. Orr do the total thyroidectomy and to have me do the radical neck dissection immediately following. We did the identical procedure for the two girls, and the findings were essentially the same, except that the process was not

quite as pronounced or as far along in the second case. The wounds healed nicely, and we followed with radiation therapy of two different types, external radiation therapy and radioactive iodine. The dosage of radioactive iodine was not great; one of the girls was pregnant, and we wanted to avoid any possible damage to the fetus.

Dr. Max Allen is planning further radioactive iodine treatment, as seems indicated. We think it is important to follow these girls, and will follow them at regular two-month intervals for the first year or two, and after that perhaps every three or four months for some little time.

In connection with the implications of twinning and neoplasms, it seems most timely that recently there was a nice, short editorial in the J. A. M. A. relating to this problem, entitled "Neoplasms in Identical Twins."[4]

There was a study by Macklin[5] in 1940 concerning the incidence of neoplasms in twins in which the incidence of neoplasms in identical twins was compared with that in fraternal twins. She found in identical twins, in which one member had cancer, that the other twin had cancer in 60 per cent of the cases, with similar tumors occurring in almost 95 per cent. The difference in age at the time of onset of symptoms in the pairs of twins averaged 1½ years. In contrast, fraternal twins with cancer showed that both members had cancer in only 35 per cent of cases, and just over 50 per cent of these had similar tumors. The average difference in age at the time of onset of symptoms in the fraternal twins was 6.3 years.

Dr. Helwig: Some years ago Dr. Macklin also made a study of the occurrence in sisters of carcinoma of the same breast.[6] The frequency of occurrence of carcinoma in the same breast in sisters is considerably greater than can be accounted for by chance alone. Some figures were given, which someone subjected to mathematical analysis, and it was found that the chance of two daughters of a mother having carcinoma of the left breast developing carcinoma of the left breast would be 10 times less likely than drawing a perfect bridge hand. But when we see over 60 per cent in identical twins, this would raise that tremendously; I should think it would be like drawing perfect hands every night for a year.

Dr. Litton: Dr. Helwig, I'd like to summarize the radiation therapy given in these cases. As far as the diagnostic studies with radioactive iodine are concerned, 200 microcuries and 500 microcuries, respectively, were given initially. Their uptake determinations over the thyroid areas were something like 10 per cent and 15 per cent, and excretion studies showed that about 80 per cent was excreted in the urine, which would indicate to us that there was essentially no functioning metastatic tissue anyplace. As Dr. Robinson has said, it is not customary to take out all the thyroid tissue at surgery, and in our diagnostic studies following total thyroidectomy we not infrequently get as much as 20 per cent I^{131} uptake over the thyroid area. So postoperatively each of the girls was given 45 millicuries of radioactive iodine orally for the purpose of complete ablation of functioning thyroid tissue, and x-ray therapy amounting to a total depth dose of 3,000 r to the right cervical area.

Dr. Helwig: I believe it might be well to mention that paradoxically this type of tumor, which is a well differentiated tumor in contrast to the highly undifferentiated round cell, spindle cell, or pleomorphic cell tumors, is a relatively radiation-responsive tumor. At the Mayo Clinic, some surgeons take out the homolateral lobe and, if there are no evident nodes, they radiate and feel that may be adequate because these tumors do respond nicely. So I would think, under the circumstances, that you could feel pretty secure about what you've given in this instance.

Were any autoradiograms made, and what did they show?

Dr. Bly: We did both autoradiograms and radioisotope assays on the various thyroid tissues and lymph nodes removed surgically from the two girls. Normal thyroid tissue showed very good uptake. The areas of completely carcinomatous tissue in the thyroid or lymph nodes had an average of something like 0.8 counts per minute per mg. of tissue, in contrast to about 150 counts per minute per mg. of the normal thyroid tissue. In other words, the cancerous tissue in these girls had less than 1 per cent as high an uptake of I^{131} as the normal thyroid tissue. We recall that these are both papillary adenocarcinomas of the thyroid, which show in general considerably less uptake than well differentiated acinar colloid-forming types of carcinoma. However, it must be remembered that some papillary carcinomas and some colloid carcinomas do show radioiodine uptake, and that it is conceivably possible in some of these to extirpate metastases and any remaining thyroid by internal radiation. However, complete success by this means is not common.

We had one patient with cancer of the thyroid at the University of Rochester who received a total of about a curie and a half. He got 400 millicuries at one dose, 600 at the second dose, and 400 at the third dose, and there were still metastases composed of normal-looking thyroid acinar tissue and containing radioactive iodine located in the iliac crest, vertebrae, and various other areas. Even with that intensive radiation by radioiodine which some of the glands had taken up, they had not been sensitive enough to be knocked out.

Dr. Helwig: It has been demonstrated[7] that the ability of metastatic tumors to take up radioactive iodine is increased after the thyroid has been removed surgically or knocked out by internal I^{131} irradiation or by thiouracil administration. This is presumably mediated by thyrotropic hormone of the pituitary and can be induced or accentuated by administration of this hormone prior to giving radioactive iodine.

Dr. Robinson: Does anyone know the effect of radioactive iodine on the fetus, and what one might expect to happen?

Dr. Helwig: There have been reports[7] of sterility as a result of radioactive iodine knocking out the ovary, but I don't know how frequently it occurs.

Dr. Bly: In these two patients, particularly in one patient, it was found that most of the iodine was excreted in the urine. Any taken up by the fetus would be taken up in the thyroid gland. The pregnant girl postoperatively had 45 millicuries, which is not a large therapeutic dose for thyroid cancer. However, since doses of about a millicurie have been said to produce adenomas of the thyroid in rats, a dose of 45 millicuries given to a mother whose thyroid had been largely removed might present a high blood concentration to the fetal thyroid before being almost completely excreted via the mother's urine. On the other hand, the thyroid follicles, although formed and containing some colloid by the fourth fetal month, would probably not show much I^{131} uptake yet. I know of no reports on any damaging effect to fetal thyroid tissue.

Dr. Robinson: It must also be remembered that the removal of this much thyroid will necessitate the administration of thyroid extract postoperatively. Don't forget also that the parathyroids are often removed with a total thyroid specimen, so signs of tetany must be watched for very carefully in the first week or so. I'll never forget the first thyroid I ever removed. I came in the next morning and found the patient with her hands and feet clenched and drawn up in tetanic contracture, and I was pretty upset about it. I questioned her, since I didn't think I could be that far off, and she said that every spring and fall she had attacks just the same way. I think she was one of those rare people who have idiopathic hypocalcemia of parathyroid origin.

I think it ought to be impressed upon the people at this conference that this is the type of neoplasm that smoulders, and if one can get rid of even rather extensive metastases once they have occurred, he can expect the patient to have quite a fair survival period. Sometimes this neoplasm occurs in the very young, four- or five-year-old children, yet even when it has invaded the mediastinal nodes and these are removed, the prognosis is still pretty good.

Dr. Helwig: Yes. Thyroid surgery in these cases is quite effective. I noticed an article by George Crile[8] in which he reports that he removes any involved nodes and takes out the homolateral lobe. Then he waits for the rest of the nodes to pop up and takes them out one at a time; and I know that has been followed by a number of other surgeons. Because of the extremely slow growth and slow evolution of the tumor, he doesn't feel that he is jeopardizing the patient's future.

Let's have the last case, Dr. Brooker.

CASE NO. 53-52

Dr. Brooker: The third case is that of a 62-year-old white woman, admitted to the medical center for a progressively enlarging mass in the neck, with shortness of breath and difficulty in swallowing. She had had an enlarged thyroid for approximately 20 years without any treatment, and had experienced pain in the left shoulder and upper arm for 8 months prior to admission.

Physical examination showed this huge mass in the neck to be bilateral, but it was more extensive on the left. It was nodular, compressed the trachea,

Figure 2. Photograph of the patient before operation showing extensive involvement of the neck by the large, nodular tumor. Note the tortuosity of the dilated superficial veins over the upper sternum.

and extended into all triangles of the neck and beneath the sternum. Her radioactive iodine uptake was 9 per cent, and roentgenograms of the chest revealed calcification in the thyroid area. There were minimal signs of sympathetic and upper brachial cord involvement. The blood pressure was 140/70 and the pulse 82 per minute. Hemoglobin was 7.7 grams, and other laboratory studies were not contributory.

Five days after admission, an exploratory operation was performed, at which time much of the tumor was removed, but it was impossible to resect the whole tumor because of its wide local extension and gross invasion of large veins. A tracheotomy was done during surgery.

Postoperatively, radiation therapy was instituted and recovery was uneventful. The patient was dismissed with the tracheotomy tube in place.

Dr. Kittle: At the time of operation, we found that this large goiter involved almost every structure in the patient's neck with extensive invasion of the larynx and trachea from the thyroid cartilage down to the jugular notch, making it impossible to find any sort of a dissection plane. It was adherent to both of the carotid arteries and had invaded extensively into the neck muscles. On the left side, the internal jugular vein contained large masses of the tumor tissue itself, so that in order to ligate the vessel it was actually necessary to grasp it and milk the tumor tissue down. I think that gives you perhaps the best idea about how invasive and extensive this tumor was. We had to excise as much of the tumor as possible, but admittedly there was still a fair amount of the tumor mass left. We elected to do a tracheotomy at the time of surgery because of the need for postoperative irradiation and the distortion of the trachea, and because past experience has shown that as these patients receive radiation a great deal of tracheal edema occurs. Postoperatively the patient did as well as could be expected, and she was referred to x-ray for further therapy.

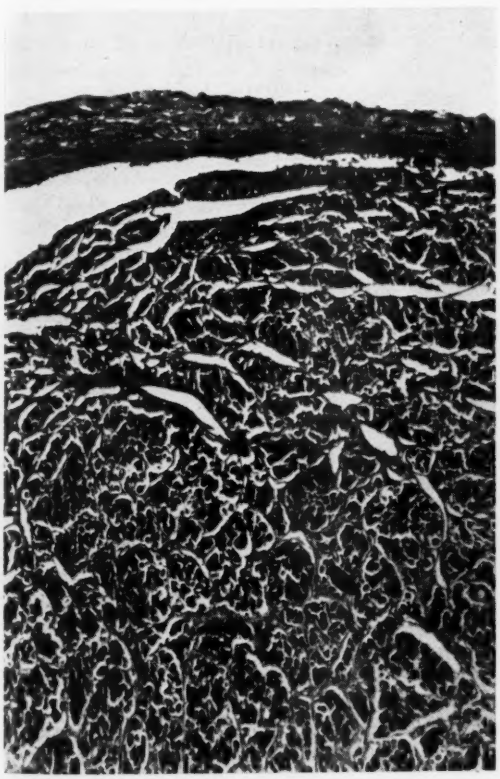

Figure 3. Photomicrograph of the tumor to show its alveolar pattern and presence within a vein, the wall of which can be seen in the upper part of the photograph. Verhoeff-van Gieson, X 50.

Dr. Helwig: How much radiation have you given her, Dr. Litton?

Dr. Litton: She got a depth dose of 1,740 r. This was a large tumor, and to get a 1,740 r depth dose we had to give close to skin tolerance on each side, at least over 3,000 r.

Dr. Helwig: Dr. Boley, would you tell us about the pathology of this tumor?

Dr. Boley: I think there are two facts worthy of emphasis. One is that the total weight of the material removed was 330 gms. The veins were extensively involved by tumor so that they were somewhat like small sausages. Microscopically, the tumor was composed of large, uniform, acidophilic Hürthle cells, with some variation in the nuclei. We feel that it is a malignant Hürthle cell tumor.

Dr. Helwig: Did it produce any colloid at all?

Dr. Boley: No.

Dr. Helwig: It might be mentioned that this relatively noncolloid producing tumor will occasionally take up I^{131}. On the other hand, I don't believe any of them have been found which would take it up in therapeutic amounts.

Dr. Kittle: Certainly this is an excellent example of an individual who has had a goiter for a great many years and feels that there is nothing that needs to be done about it until the goiter attains such size that he has either dyspnea or dysphagia. Many such goiters may undergo malignant change, and this in itself is indication for advising patients to have these goiters excised. Another interesting thing is the type of tumor, the so-called Hürthle cell tumor. It is one of the more obscure types of thyroid carcinoma. In a series of some 112 cases[9] reviewed at Johns Hopkins University, only 6 instances of Hürthle cell tumor were found.

Since there is a great deal of dispute among pathologists about the malignancy of thyroid lesions, I'd like to ask whether they call a Hürthle cell tumor benign or malignant. I think the confusion may arise

because the Hürthle cell tumor does not tend to metastasize but is locally invasive. It is analogous to a basal cell tumor, which does not metastasize.

Dr. Helwig: I don't think we can overemphasize what Dr. Kittle says. In a series at the Lahey Clinic,[10] of 1,971 solitary adenomas of the thyroid gland, there were 10 per cent malignant tumors. That is a high percentage, since in diffuse goiters it runs not over 0.6 per cent. Thus there's a 10 per cent chance of adenomas becoming malignant, and I think we can say, therefore, that solitary adenoma of the thyroid gland is a lesion which should always be taken out. In my own material, I think at least 80 to 85 per cent of all cancers of the thyroid that I have seen in the past 30 years have started as solitary adenomas. How do you feel about that, Dr. Robinson? Am I being a little too sanguine?

Dr. Robinson: No, I think you're right. I have been thinking, as you were talking, about how one should manage a thyroid that clinically has a single nodule. At the time of surgery one often finds 4 to 10 other nodules in the thyroid which could not be felt from the outside, but which are there and have the same malignant potentiality as the bigger one. Therefore, I think one has to do a thorough exploration of both lobes of the thyroid and not just do a minimal exposure.

Dr. Helwig: I think we've got to differentiate between adenomas that are neoplastic and pseudoadenomas of the thyroid. Now the ordinary colloid goiter may have hidden in it, it's quite true, a fetal adenoma, or whatever you want to call it, but the majority of them obviously are not neoplastic processes at all. If you've got a big nodular goiter, it ought to come out anyway, but if you've got just one solitary nodule in an otherwise normal gland, I certainly think you're justified in removing that nodule.

Dr. Kittle: Dr. Helwig, do you find some of these glands with two or three discrete adenomas?

Dr. Helwig: Yes, we do, we surely do; but that's a nodular goiter, and such goiters should come out.

I should like to comment on the possible side effects of radioiodine. Aside from the salutary myxedema and occasional castration effect, you may get a pancytopenia; there have been deaths from pancytopenia from too large doses of I^{131}. There has been loss of hair over the areas of metastasis where the I^{131} has concentrated, particularly if they are in the skull. However, this is a minor affair in someone with bony or soft tissue metastases.

Dr. Robinson: What is the half-life of radioiodine?

Dr. Helwig: Eight days, and it's practically all (about 99 per cent) gone in 53 days.

Another point I think important is, don't be spilling that urine around indiscriminately because of the very high concentration of iodine that we know is constantly emitting beta and gamma radiations. Measurements of radioactivity in the urine are necessary in order to calculate the amount of uptake by the body, but be careful in handling the urine; someone might get a little overdose from fooling with it. It's pretty active, because practically all of the radioactive iodine is excreted through the kidney.

Dr. Robinson: For how many years now have we been using radioactive iodine?

Dr. Bly: There was a small amount produced by Fermi in 1938. There were minute quantities available until the war, when the A.E.C. piles produced it in large quantity. Hertz[11] used radioactive iodine in animals in 1938 and reported its use in 10 hyperthyroid patients in 1942.

Dr. Robinson: It's been only 5 to 7 years since anyone has had very much of this to give, and that's hardly long enough to see whether there are any neoplastic potentialities. This is something for which we must be on the lookout.

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Academic Promotions at K.U.

The following promotions in academic rank have been announced for the University of Kansas School of Medicine by Chancellor Franklin D. Murphy:

To professor: Dr. E. Grey Dimond, medicine (chairman).

To associate professor: Dr. Jesse D. Rising, medicine; Dr. Leland D. Stoddard, pathology; Dr. H. I. Firminger, pathology; Dr. William P. Williamson, surgery; Dr. James O. Boley, pathology.

To assistant professor: Dr. Franklin Behrle, pediatrics; Dr. Sigmund Gundle, psychiatry; Dr. Frederick Kittle, surgery; Dr. Charles E. Brackett, surgery.

To associate: Dr. Frederick Speer, pediatrics; Dr. J. E. McConchie, radiology; Dr. Doris Kubin, radiology.

ACTIVITIES OF MEMBERS

Dr. Edward X. Crowley and Dr. Norman C. Siebert, Wichita, recently became diplomates of the American Board of Obstetrics and Gynecology.

Dr. Ronald McCoy, Coldwater, announces that Dr. Robert E. Bodmer is now associated with him in practice.

Dr. Delbert V. Preheim, who formerly practiced in Moundridge, has become a member of the staff of the Bethel Clinic, Newton, and is specializing in internal medicine.

The Eddy Clinic, Hays, announces that Dr. Harry R. Custer, surgeon, is now a member of its staff. Dr. Custer, a graduate of the College of Medicine of Ohio State University in 1948, comes to Kansas from Columbus, Ohio, where he was senior resident of the department of surgery, Ohio State Medical Center, chief resident of the department of pediatric surgery at the center, and resident surgeon at St. Francis Hospital, Columbus.

Dr. George W. Cowles and Dr. Edward X. Crowley, Wichita, announce that Dr. Grant E. Evans is now associated with them in practice.

Dr. Ralph B. Earp, who began practice in 1897, last month announced his retirement from active practice in El Dorado.

Dr. Mahlon H. Delp, assistant dean in charge of postgraduate affairs and professor of medicine at the University of Kansas School of Medicine, was named as the faculty member most devoted to his primary objective as a teacher by the senior class of 1953. With that distinction he became winner of the Jayhawker Award, offered by the *Jayhawker M.D.,* yearbook.

Dr. Howard R. Wagenblast, Lawrence, resigned last month as director of the Lawrence-Douglas County Health Department to enter the U. S. Public Health Service. He will be stationed at Denver as a senior assistant surgeon. Dr. Byron W. Walters, who formerly practiced in Marquette and has been in Lawrence since last fall, has accepted an appointment as temporary director of the health department.

Dr. Robert C. McClymonds, Walton, who completed 50 years of practice there on August 9, was honored by the community on his anniversary with an open house celebration. Feature stories about him were published in the *Kansas City Times,* the *Wichita Eagle,* and other newspapers.

Dr. Jane W. Tillinghast, associate in psychiatry at the University of Kansas School of Medicine, has begun direction of a psychiatric outpatient clinic at the medical center.

Dr. Charles H. Johnson has closed his office in Osawatomie and has moved to Mission where he is associated with the Johnson Clinic. He had been practicing in Osawatomie since 1946.

The Bradley-Waldorf clinic, Greensburg, announces that Dr. Frank C. Brosius is now a member of its staff. Dr. M. H. Waldorf, one of the partners at the clinic, is now serving in the Air Force.

Dr. A. N. Lemoine, Jr., chairman of the department of ophthalmology at the University of Kansas Medical Center, presented a paper, "Diabetic Changes of the Eye," before a recent meeting of the Washington University School of Medicine staff in St. Louis.

Dr. Lafe W. Bauer, Dr. Dennis A. Hardman, and Dr. Robert G. Sheppard, Smith Center, announce that Dr. Hugh J. Woods, a graduate of the University of Kansas School of Medicine, is now associated with them in practice.

Dr. LaRue W. Owen, Wichita, began a residency at the University of Kansas Medical Center on July 1.

Dr. D. W. Robinson, chairman of the section on plastic surgery at the University of Kansas Medical Center, is attending a meeting of the International Society of Surgeons in Lisbon, Portugal, this month. On October 6 he will address a meeting of plastic surgeons in Stoke, England.

Dr. Ralph R. Preston was recently released from

service with the Navy and has returned to his practice in Topeka in association with Dr. H. W. Powers. During his Navy duty, Dr. Preston was stationed in Washington, D. C.

Dr. R. L. Newman, associate professor of obstetrics and gynecology at the University of Kansas Medical Center, presented a paper, "Cancer of the Ovary," at a recent meeting of the American Academy of Obstetrics and Gynecology in Little Rock, Arkansas.

Dr. Charles M. Newman, Axtell, announces that Dr. W. R. Miller, formerly of Sterling, Nebraska, is now associated with him in practice. Dr. Miller practiced in Summerfield, Kansas, from 1919 to 1925, and later spent four years with the U. S. Public Health Service in Alaska.

Dr. William H. Crouch, Topeka, was guest speaker at a recent meeting of the West Topeka Kiwanis Club.

Dr. A. H. Dyck, McPherson, was elected to fill the unexpired term of Dr. Orville Walters as secretary of the McPherson County Medical Society at a meeting held last month. Dr. Walters was granted a two-year leave of absence to serve on the staff of Winter Veterans Administration Hospital, Topeka.

Dr. Ernest M. Seydell, Wichita, announces that Dr. Joseph A. Budetti is now associated with him in the practice of otolaryngology. For the past two and one-half years Dr. Budetti was chief of the ear, nose, and throat section of Tokyo Army Hospital and consultant otolaryngologist for the Far East Command. Prior to the Korean War he practiced in New Rochelle, New York.

Dr. Fred J. McEwen, Wichita, is the author of a paper, "Cardiac Arrhythmias and their Management," which was published in the *Mississippi Doctor* for July. The paper was presented at a meeting of the Mid-South Postgraduate Medical Assembly in Memphis in February.

Dr. R. A. J. Shelley, Coldwater, is one of 93 physicians who will be honored by the University of Tennessee at exercises scheduled for September 28. Dr. Shelley, who received his medical degree there in 1903, is receiving recognition for his services to his community during the past 50 years.

Kansas City Southwest Clinical Society

The annual scientific program of the Kansas City Southwest Clinical Society will be presented at the Municipal Auditorium, Kansas City, Missouri, September 28 through October 1. A list of the guest speakers who will take part may be found in an advertisement on Page V of this issue.

In addition to lectures before the general assemblies, the guests will participate in a panel discussion as the closing feature of each day's session, except on September 29 when the session will close with a clinico-pathologic conference.

Color television programs, medical and surgical, will open the morning sessions from September 29 through October 1. This program has been arranged through the courtesy of Smith, Kline and French Laboratories. Two cameras projected on two large screens will afford adequate vision for an audience of 500 persons.

The entertainment will include a dinner, floor show, and dance in the Grand Ballroom of the Muehlebach Hotel on September 29.

Grant to Medical Center

A grant of $25,115.50 to the University of Kansas School of Medicine was announced recently by E. Sloan Colt, president of the National Fund for Medical Education. That amount is part of a total of $1,944,151.64 distributed among 79 medical and basic science schools in the United States.

The purpose of the awards is to "strengthen medical school teaching standards" through provision of funds to pay teaching salaries, create new faculty posts, and initiate teaching experiments, the announcement reported. In 1951 the Kansas school received $15,000 from the fund; in 1952, $21,970.

The fund is built up through contributions from corporations—through the fund's industry committee—and the medical profession.

DEATH NOTICES

William Redmon Frisbey, M.D.

Dr. William R. Frisbey, 80, an honorary member of the Shawnee County Medical Society, died on July 28 at the home of his daughter in Des Moines. He had retired from the active practice of medicine in Delia some time ago. Dr. Frisbey was graduated from Kansas Medical College, Topeka, in 1903, and began practice in Delia shortly afterward.

Obstetrical Society Meeting

The Kansas State Obstetrical Society, which has just completed its first year and has a membership of 148 physicians, will meet at the University of Kansas Medical Center, Kansas City, on November 9, 10, and 11 in conjunction with the postgraduate course in obstetrics and gynecology being offered there. A second meeting of the group will be held in Junction City at a date to be announced later, and a third meeting will be held in Topeka at the time of the annual meeting of the Kansas Medical Society next May.

Membership is open to all physicians interested in lowering the number of fetal and maternal deaths in the state. One phase of plans to carry out that objective is the careful analysis of such deaths.

Dr. Robert H. Maxwell, Wichita, is president of the organization, and Dr. Robert M. Carr, Junction City, is secretary-treasurer.

BLUE SHIELD

Fee Survey

A state wide fee survey just completed has resulted in agreement by the Blue Shield Fee Committee of the Kansas Medical Society on a set of relative charges for the most frequent procedures paid for by Blue Shield. In other words the committee has established a scale against which to measure the level of Blue Shield payments. For example, the survey showed an average charge over the state of $137 for an appendectomy. The Blue Shield payment of $100 for an appendectomy is therefore 73 per cent of the average charge.

Using a level of from 65 to 75 per cent, the committee has made recommendations for minor adjustments both up and down in Blue Shield's payment for certain of these frequent procedures. It is the intention of the committee to continue studying physicians' charges and to continue to recommend adjustments in Blue Shield as changes occur in the practice of medicine and in average charges.

It is believed by the committee that this is the most accurate study that has been developed so far. The entire membership of the Kansas Medical Society received a questionnaire regarding the charges made for certain surgical procedures, for non-surgical treatment, for x-ray, and for anesthesia services. Each physician was asked to list his charge for these procedures and to estimate the number of times the procedures were done in a 12-month period. When the first questionnaire was not returned in as large numbers as desired, a second one was sent out with exactly the same questions. Five hundred sixty-eight questionnaires were returned properly completed so that they could be used.

Five subcommittees of the fee committee were appointed to prepare average charges in each of five counties. This was done to provide a way of judging the accuracy of the charges developed by the survey. When the fee committee met on August 2, the results of the survey were thoroughly discussed and evaluated. Also discussed was the report that some physicians are using a patient's Blue Shield membership as an excuse to make a double charge. It is believed that this is not a condition which is prevalent in Kansas.

The accompanying table shows the charges made over the state for the 34 most frequent procedures paid for by Blue Shield. It is being reproduced on these pages to inform Kansas physicians of the interesting results of the survey.

Procedure	*Weighted Average Charge*
Anesthesia (Minor)	$ 12
Anesthesia (Major)	28
Cataract Removal	212
Strabismus	144
T. & A. (under 12)	42
Submucous Resection	97
Appendectomy	137
Hemorrhoidectomy (Internal)	81
Hernioplasty (Single)	113
Cholecystectomy	190
Thyroidectomy (Sub-total)	178
Pilonidal Cyst or Sinus	80
Breast (Simple Removal)	94
Radical Mastectomy	200
Ligation (Saphenous—High)	72
Dilatation and Curettage	42
Hysterectomy (Supravaginal)	182
Ovariectomy	140
Cystocele and Rectocele	123
Medical Hospital Visits	4
Delivery Only	57
Delivery and Prenatal Care	87
Cesarean Section	176
Colles' Fracture	53
Fracture, Humerus	81
Fracture, Tibia	93
Tenorrhaphy	48
Removal Semi-lunar Cartilage of Knee	140
X-ray of Pelvis	12
X-ray of Humerus	10
X-ray of Spine	29
X-ray Therapy—Cancer of Cervix	233
Prostatectomy (Suprapubic)	208
Nephrectomy	225

A recent issue of the *Cancer Bulletin* reported the results of showing the film, "Breast Self-Examination," to 1,280 Iowa women, all over 35 years of age. After seeing the film, 120 women made appointments for complete physical examinations. Thirty-two had suspicious lumps, and biopsies from those proved that six women had breast cancer. This represents a diagnostic yield of five per cent.

Moniliasis: A Complication of Antibiotic Therapy*

Marilyn K. Hutchison, M.D.,**
Kansas City, Missouri

Since the advent of penicillin and the later antibiotics, toxic side effects continue to be reported as experience with these valuable therapeutic drugs gradually accumulates. These adverse effects vary in severity from a mild penicillin-induced urticaria to the fatal aplastic anemia which has been widely reported during the past year as a sequel to chloramphenicol therapy. One complication of the antibiotics, however, has received little emphasis—the occurrence of moniliasis.

Moniliasis is a fungus disease, caused by the yeast-like species of Candida (Monilia), usually C. albicans. In the most frequently encountered oropharyngeal, cutaneous, and vaginal forms, monilial infections tend to follow a benign course. Since these forms present an annoying but rarely difficult therapeutic problem, the physician may fail to recall that the fungus may also produce lesions of the bronchi or lungs and the more serious conditions of septicemia, endocarditis, and meningitis. It is with regard to these latter conditions that the appearance of moniliasis during or following antibiotic therapy gains clinical importance.

Much has been written about the sensitivity of various types of bacteria to the different antibiotics, and considerable concern has been expressed over "resistant" strains which constituted, in each individual case, a therapeutic failure. It appears that the full picture has not been generally appreciated. Lipman, Coss and Boots[38] showed in 1948 that when penicillin was administered for prolonged periods of time to normal subjects, the result was a replacement of the predominantly gram-positive flora of the throat by gram-negative bacteria. Barach[3] noted that the use of antibiotics to effect simultaneous eradication of gram-negative and gram-positive bacteria results in some cases in invasion with such highly resistant organisms as B. proteus and C. albicans.

It is this sort of change which the ecologists describe as a disturbance or upset in the balance of nature. Confirming the existence of such biologic imbalance is not always an easy matter. The exact etiologic significance of Candida albicans in any disease is difficult to establish since it may be found in the mouth,[32] the intestinal tract,[59] or the vagina in 35-40 per cent of normal people,[10] and as a secondary contaminant in other recognized diseases.[60] It is obvious, therefore, that most infections have an endogenous source and the determination of the primary source of infection is often a difficult problem, particularly since such a source may have existed for some time but was held in check by other flora, as will be discussed later.

The occurrence of moniliasis as a result of antibiotic therapy has been noted and reported in several foreign countries as well as in the United States, as the fungus Candida, unlike many other mycoses,[9] has a world-wide distribution. As will be seen, all forms of the disease have been observed.

Cutaneous: Infections of the skin, particularly of the intertriginous areas (axillae, inframammary, inguinal, intergluteal, interdigital webs of the hands and feet) are not uncommon and are usually the result of autoinnoculation from the mouth or gastrointestinal tract. Gewin[19] in 1951 reported on a case of staphylococcic endocarditis in which oral and skin lesions appeared during aureomycin and chloramphenicol therapy, and which he attributed to induced deficiency of the vitamin-B-complex. Hall [21] and Leitner[37] drew similar conclusions. However, Tomaszewski[64] found that such lesions appeared despite vitamin treatment, and in many patients Candida was found to have replaced the bacterial flora.

The typical cutaneous form of moniliasis described by Hauser[24] as monilial granuloma begins in childhood, often with oral thrush, and ultimately involves the oral mucosa, fingernails, and paronychial tissues[52] and the skin of face and scalp. Lesions consist of chronic, intractable granulomas, which on the skin are often surmounted with cutaneous horns. In four of the cases followed by Hauser for several years, death occurred in all before the 20th year of life.

Reiches[56] found that genitocrural dermatitis developed frequently in both sexes during and after therapy with aureomycin, chloramphenicol, and terramycin, and that diarrhea was not an essential factor in causing the pruritus. He also concluded that although normal persons may harbor monilia asymptomatically, the appearance of symptoms (itching, burning, dermatitis) indicates the actual invasion of the skin or mucous membrane.

Vaginal: Monilial vaginitis is perhaps the most common of all forms of moniliasis, particularly in pregnancy, in postmenopausal women, and in diabetics, the carbohydrate-rich environment in these groups cited as enhancing the growth of the fungus.[49]

* This is one of 11 senior theses selected for publication by the Editorial Board from a group of 15 judged the best by the faculty of the University of Kansas School of Medicine.
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Harris[23] reports encountering lesions of the oral, vaginal, vulval, and perianal regions as frequent side effects in the treatment of brucellosis with aureomycin and chloramphenicol. When cultures of the vaginal and vulval exudates were made, C. albicans was obtained. These lesions responded to fungicidal treatment.

Gastrointestinal: Oropharyngeal moniliasis (thrush) occurs most frequently in infants and elderly people with wasting diseases, such as tuberculosis and cancer. As early as 1839, Langenbeck[9] demonstrated in thrush the presence of a yeast-like budding fungus. The "black hairy tongue" of monilial stomatitis has been described often, for the most part following the use of penicillin pastilles (troches) as by Lahiri[35] in 1947 and Wolfson[68] in 1949. Florey[13] states that despite some favorable results claimed for penicillin in the treatment of moniliasis, he has observed C. albicans to be cultured from several chronic sinuses during daily instillation of penicillin after the original pathogens had disappeared. Hewitt[25] reported the development of a dark brown discoloration of the tongue in six patients treated with chloramphenicol, and isolated C. albicans in cultures of three of these. Lighterman[36] also noted an increasing incidence of oral moniliasis in patients receiving aureomycin, as did Pappenfort and Schnall.[53]

Woods[69] reports on a group of 20 patients among those regularly encountered with sore mouth, hairy tongue, perliche, or the clinical picture of thrush, resulting from the local use of penicillin or aureomycin (as sprays, troches, soluble tablets, or powders) in the oropharynx. These preparations have been widely prescribed to patients by physicians and druggists, and the reactions produced by their use have been so frequent as to cause many physicians to discontinue this form of therapy.

Intestinal disturbances have been frequently observed by numerous physicians during antibiotic therapy, notably with aureomycin, but relatively few have attempted an investigation of the cause. Woods[69] described the presenting complaint as being usually a mild persistent diarrhea, the stools occasionally containing mucus and rarely blood. He observed this symptom complex in one patient following prolonged penicillin therapy, in one patient following administration of aureomycin for a respiratory infection, and in another patient who had received both drugs. In these patients and in three others who were asymptomatic, Candida albicans was found to be the predominating organism, and its growth was significantly heavy.

Bierman[5] reports on two children and two adults who were given aureomycin or chloramphenicol, or both, for periods of from 29 to 96 days. Yeast-like organisms were found in stools during therapy, but normal flora returned in 48 hours after the drugs were discontinued. Merliss[44] has observed steatorrhea following the use of antibiotics. Beck[4] and Jacob[26] have commented on the changing intestinal flora following antibiotics, while Kligman[33] is among the few who maintain that increased monilial incidence cannot be correlated with intensive antibiotic administration.

Respiratory: Bronchial moniliasis is not uncommon. A particular type of infection occurs in the tea-tasters of Ceylon[9] and was described in detail by Castellani in 1905. In bronchial moniliasis, the physical signs are those of bronchitis with medium and coarse rales[50] at the bases of the lungs. Moore[46] has described a case in which Candida albicans was isolated from the sputum of the patient following oral aureomycin. Golden yellow crystals considered to be an altered form of aureomycin were found in the center of each colony. Aureomycin crystals when placed on plates seeded with C. albicans tend to inhibit the organism's growth. However, dilute aureomycin had a stimulatory effect on the fungus.

Pulmonary moniliasis is not as common as the bronchial form, but is a more serious disease. The temperature and pulse are elevated moderately, pleural pain is common, and effusion occurs occasionally. Harassing cough produces mucoid gelatinous sputum which sometimes is blood streaked. It has been shown that following administration, aureomycin diffuses into the pleural cavity as well as into the bile,[63] and recently Wolff[67] has described the occurrence of monilial pneumonia following aureomycin therapy. Biopsies of the case reported a decade ago by Miale[45] showed in H and E stain a granulomatous lesion and tubercle formation with giant cells and epithelioid cells, which led to a diagnosis of tuberculosis. At autopsy, the true nature of the disease was determined, and re-examination of the biopsy material using Gram's stain showed typical fungus elements in the deep tissues and in the areas of caseation. The cause of death was monilial meningitis.

A similar case is reported by Abrams.[1] Candida asthma has also been observed subsequent to aerosol penicillin administration.[31] Ormerod and Friedman[51] have written up a case of oropharyngeal moniliasis, resulting from extensive penicillin treatment of a cold, which spread to the bronchi with extensive ulceration of the oral cavity, upper respiratory tract, and right main bronchus.

In April, 1951, the Council on Pharmacy and Chemistry of the American Medical Association decided that a warning statement should be added to the label of chloramphenicol, aureomycin, and terramycin. This report of the council pointed out that the overgrowth of monilia and other yeast-like organisms following the administration of antibiotics occurs most frequently in the large bowel and is of slight importance; however, it emphasized that deaths

from pulmonary moniliasis can occur following therapy with these new preparations.

Systemic: The principal significance of many of the above cases lies in the fact that they may serve as a portal of infection which may lead to systemic invasion of the body by the fungus. This may occur as visceral involvement, endocarditis, meningitis, or any combination of these.

The earliest recorded case of monilial meningitis is that of Smith and Sano[62] in 1933. A decade later, Miale wrote up the case previously mentioned in which an erroneous diagnosis of tuberculosis was made prior to autopsy, and in 1945 Morris[47] described a case of ependymitis and meningitis due to Candida albicans. It is of interest to note that both the latter two cases had as a primary source of infection a tooth extraction, a condition in which the antibiotics are commonly employed. Halpert[22] in 1946, Geiger[18] in 1947, and Parillo[54] in 1950 are others who have observed monilial meningitis, and Mosberg[48] described a case of generalized and cerebral moniliasis co-existing with torula meningoencephalitis after therapy with penicillin and streptomycin.

Up to the present time, 15 cases of monilial endocarditis have been reported in the literature. Joachim and Polayes[27] appear to have written up the first such case (1940), followed by the report of a case by Sachs[57] in 1941. The following year Pasternack,[55] Zimmerman,[70] Wikler,[65] and Emmons[12] all reported cases. Geiger reported, in addition to the above case of endocarditis with meningitis, another case of endocarditis in 1947. More recently, Zimmerman, Wolfe,[66] and Kunstadter[34] have added cases to the literature.

The case cited by Sachs was identified only by blood culture; all the others were proved by positive blood cultures and autopsy. Geiger's cases and those reported subsequently were apparently caused or aggravated by antibiotic administration. The five earlier cases reported by Emmons were in drug addicts, and were presumed to be infected through the injecting needle. Endocarditis in Geiger's patient did not develop until after prolonged, intensive penicillin therapy.

The case reported by Kunstadter is of particular interest, being the first such case in an infant. This patient had chronic pulmonary disease of approximately six months duration, for which no specific causative factor could be determined. During repeated bouts of fever, sulfonamides were administered with only temporary abatement of the fever and no improvement in the pulmonary pathological condition. Then, after a bronchoscopy on the 32nd hospital day and the subsequent administration of penicillin, there appeared for the first time oral and mucocutaneous thrush. The thrush responded poorly to treatment, a generalized maculopapular eruption developed, and the blood cultures became positive for Candida during the period of penicillin administration.

The autopsy findings described by Geiger are typical of those encountered in monilial endocarditis: "Loosely attached to the endocardium of the left auricle was a vegetation composed of a central core of red blood cells surrounded by a dense mass of closely packed blastospores and mycelial threads." Zimmerman mentions a "huge 2 x 5 cm. fungating vegetation involving two-thirds of the mitral valve."

Disseminated visceral involvement is no less serious. As a result of Zimmerman's first case of mycotic endocarditis, secondary to a wound and apparently stimulated by constant administration of penicillin, and the subsequent report of a case in 1949 by Dr. Sidney Farber at the Children's Medical Center in Boston, a study of disseminated moniliasis, aspergillus, and mucormycosis was carried out at the Armed Forces Institute of Pathology. Up to his last publication in 1950, Dr. Farber[70] has observed seven cases of disseminated moniliasis in children who were treated with various chemotherapeutic agents for other diseases. The majority of these children received both penicillin and aureomycin. In five, the original disease was leukemia, and in each of these cases the primary site of moniliasis was the esophagus or intestine. Most of them showed wide-spread fungus infection at autopsy.

Foley and Winter[14] in 1949 mention a case in which a postmortem diagnosis of generalized moniliasis was made in a patient who had received intensive penicillin therapy. Duhig[11] considered that monilemia with mycotic abscesses in the viscera forms a pathological entity and may or may not include oral and esophageal thrush. MacDonald[42] reported an unusual case of systemic moniliasis in which Addison's disease appeared to be due to Candida albicans involving the adrenals. He mentioned also another case in which a child who had had several courses of antibiotics was found at autopsy to have visceral invasion with Candida, including the liver and kidneys. Gausewitz[16] discussed the case of a 10-year-old boy with monilial infection of oral cavity and bronchi, resulting in fatal multiple involvement of the lungs, thyroid, kidney, and spleen and stated that prolonged treatment with penicillin and later with chloramphenicol was a significant factor in the wide dissemination of the lesions.

DIAGNOSIS

One of the greatest obstacles in making a diagnosis of moniliasis is the inadequate laboratory service available in most communities. This is due in large part to the former lack of emphasis on proper identification procedures for fungi. Culture tubes and plates are too often discarded at the end of 48 hours, be-

The inevitable restrictions of advancing years, the reduced activity and a lowered intake of bulk-producing foods all contribute to the high incidence of constipation in older persons.

CONSTIPATION IN THE AGED

Constipation is almost a universal complaint of geriatric patients

Frequently, too, the protracted use of cathartics has left the colon in an atonic state and it is no longer capable of effecting a normal evacuation.

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fore most fungi appear, and there is a tendency among uninformed laboratory personnel to report occasional fungus forms as "contaminants" or "non-pathogens."[70]

Candida albicans[20] is an oval, budding, yeast-like fungus producing both blastospores and pseudomycelium in tissue and exudates, and in culture at room temperature and at 37° C. On blood agar, the colonies are a medium dull gray, while on Sabauraud's agar they have a creamy growth with a typical "brewery" or "yeasty" odor.[7] Cultures of torula have no odor. In sugar fermentation tubes[28] Candida produces acid and gas in glucose and in maltose, acid in sucrose, and neither in lactose.

At least five different genera of fungi may at times be easily confused with each other.[70] These are Candida, aspergillus, mucor, cryptococcus (torula) and histoplasma. Cryptococcus neoformans and Histoplasma capsulatum may be eliminated from consideration if mycelial structures[2] are demonstrable. Use of a new plasma extract and characteristic growth of monilia by this method is described by Fusillo.[15]

In pulmonary infection, the x-ray films may be of value. Films of patients with bronchial moniliasis[9] usually show little more than a non-specific type of peribronchial thickening. Sometimes a peculiar hazy type of linear fibrosis can be seen. Although such a picture is not diagnostic, Dr. Robert J. Reeves of Duke Hospital often suggests the possibility of moniliasis, and cultures frequently have confirmed his impression. The shadows seen in pulmonary moniliasis resemble those seen in bronchopneumonia, except that the edges of the lesions are less sharply defined. In addition, a positive skin test to C. albicans vaccine usually is present. Agglutinins may be present in the blood in dilutions varying from 1:80 to 1:2400, or they may be absent. The diagnosis can be made with a reasonable degree of certainty if there is consistent finding of large numbers of Candida in carefully collected fresh sputum.[50] A positive blood culture confirms a diagnosis of septicemia.

TREATMENT

Treatment is uniformly difficult and frequently unsatisfactory. However, the use of sodium caprylate has been reported by Cohen and Persky[8] in the treatment of thrush, and by Keeney[31] who used the aerosol form successfully in treating bronchial moniliasis. More recently, Kass, Sasano, and Klein[30] have reported the use of brilliant green, malachite green, and methylene blue dye inhalations with considerable success in bronchopulmonary infections, providing the fungus is first determined to be sensitive to the dye in vitro. Some interesting in vitro studies in sensitivity have also been made by McVay,[41] which reveal that the methyl and propyl esters of paraben (parahydroxybenzoic acid) are capable of preventing monilial overgrowth when administered with aureomycin.

DISCUSSION

Several theories have been advanced by various authors to explain the occurrence of monilial infections during or following antibiotics. These explanations generally appear to fall into one of the following groups: (a) the growth of Candida is directly stimulated by the antibiotic, (b) the growth of Candida is aided indirectly through suppression of bacteria and other organisms which compete for nutritive substances in the substrate, (c) the growth of Candida is enhanced by change in pH of the environment through alteration in bacterial flora, and (d) host tissue resistance is lowered as the result of vitamin deficiency or some other physiopathological change.

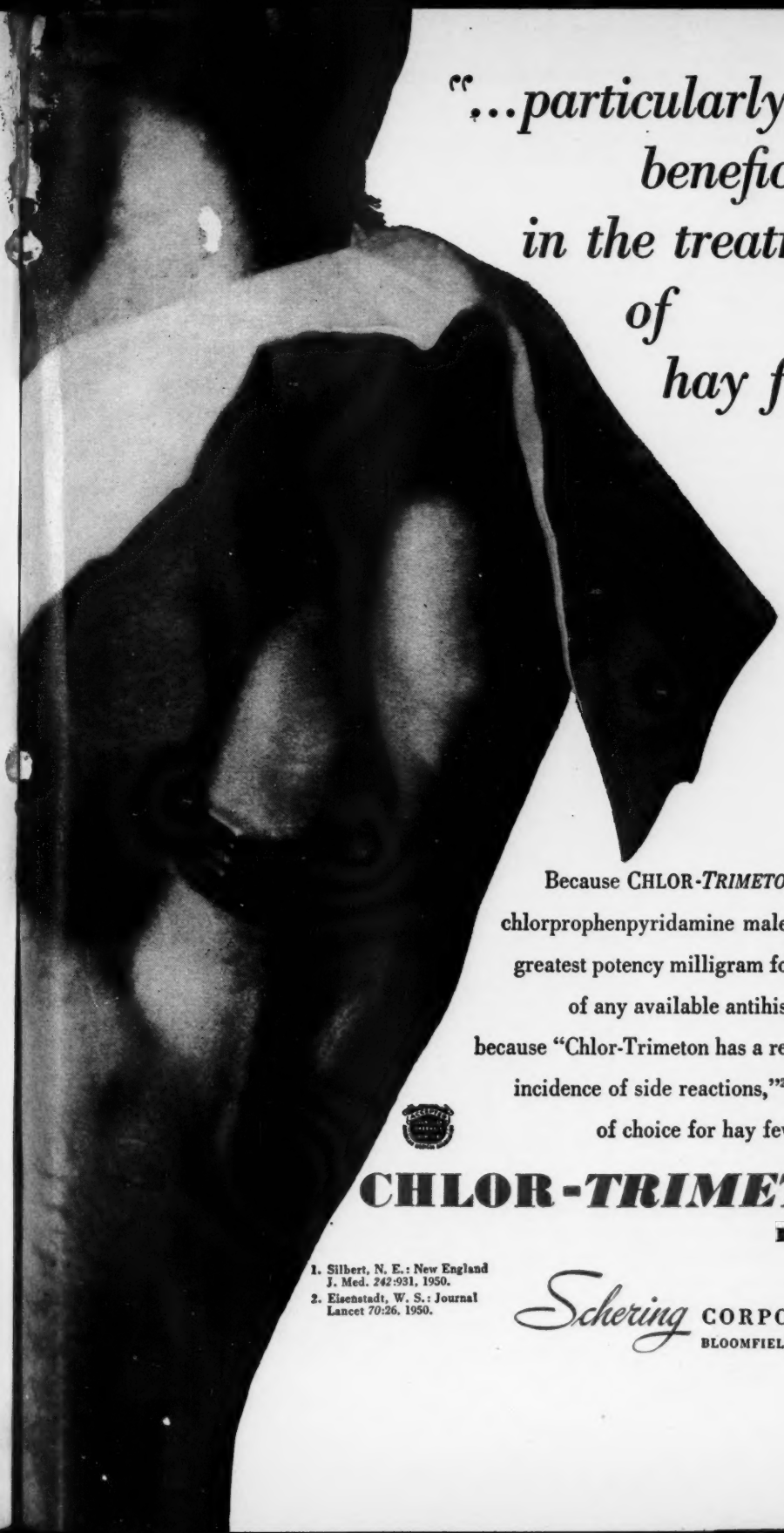
Pappenfort and Schnall[53] believe that aureomycin actually stimulates the growth of Candida, and that destruction of bacterial flora with decreased competition for available nutrients plays a secondary role. Moore[46] found that, although agar plates seeded with aureomycin crystals showed a tendency towards inhibition of the growth of Candida, dilute aureomycin had a stimulatory effect.

Campbell and Saslaw[6] also found that the growth of certain fungi was enhanced by streptomycin. Lipnik, Kligman and Strauss[39] carried out investigations to determine the role of C. albicans in the production of side reactions to antibiotics and concluded that the apparent enhancement of growth of Candida by antibiotics was actually due, not to the antibiotic itself, but to the inert phosphate content of the capsules.

Woods' studies seem to confirm those of Lipnik and associates that the antibiotics have no direct stimulating or suppressing effect on the rate of growth of Candida. He is of the opinion that suppression of bacterial flora co-existing with C. albicans and competing for nutrition in the same substrate is the most probable cause for monilial overgrowth and host infection. McClary[40] and Jacob[26] have carried out experiments which agree with such a conclusion. From clinical observations, Gewin,[19] Leitner,[37] Hall,[21] Reiches,[56] and Lighterman[36] support the view that decreased vitamin-B-complex synthesis by intestinal bacteria lowers the tissue resistance of the host.

Salvin[58] and Seligman[61] have done recent experimental work with mice which led to the same conclusions: that Candida suspensions are nonpathogenic and aureomycin solutions nontoxic when either of these alone is injected intraperitoneally into mice. The mixture of both is fatal. The virulence-enhancing activity of aureomycin is destroyed on standing at room temperature, or by boiling, a parallel to its antibiotic activity; the increased virulence was effected by lowering the host tissue resistance.

Their work is substantiated by that of Foley and



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1. Silbert, N. E.: New England J. Med. *242*:931, 1950.
2. Eisenstadt, W. S.: Journal Lancet *70*:26, 1950.

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Winter,[14] who found that a single injection of penicillin on the chorioallantoic membrane of a 10-day-old chick embryo increased the mortality resulting from Candida albicans infection. A similar enhancing effect was observed in rabbits infected with this organism, treated with penicillin intramuscularly. On the basis of in vitro experiments, they suggest that metabolic stimulation of Candida by penicillin and an "increased production and release of toxins or antigens precipitating allergic phenomena similar to the Herxheimer reaction in syphilis may be related to the in-vivo effect of penicillin as well."

The effect of a change in pH on the growth of monilia has been studied by Karnaky,[29] who inoculated a pure culture of Candida in different groups of media which varied in pH from 3.9 to 10.82 and found that the organisms grew profusely and to the same extent on all of these. Clinical observations on 41 cases of monilial vulvovaginitis showed no effect on the growth of Candida from alteration of the pH. It appears, therefore, that this is not a significant factor.

SUMMARY

Among the many reported complications of antibiotic therapy, moniliasis has received little emphasis. In its most benign forms, oropharyngeal and vulvovaginal, this fungus infection is of little clinical significance. However, such mild infections may serve as a portal of entry for systemic invasion of the body, leading to the fatal manifestations of septicemia, endocarditis, meningitis, and generalized visceral involvement.

A search of the literature on this subject has revealed 32 recorded cases of fatal monilial dissemination: 15 cases were of endocarditis (including one with meningitis), 6 other cases of meningitis (one of which co-existed with torula), 1 case of pulmonary infection and 10 cases of visceral moniliasis. It is obvious that, in view of the enormous numbers of patients who have received treatment with the antibiotic agents, such serious complications are rare. The milder forms of moniliasis, however, have appeared with such frequency as side effects of antibiotic therapy that the physician prescribing such drugs should be aware that such apparently innocuous lesions may have fatal sequellae if systemic invasion should occur.

Several possible explanations for monilial overgrowth are given, the most likely cause being suppression of bacterial flora which normally are present with Candida competing for nutrition in the same substrate, an induced vitamin deficiency playing a secondary role, with a resultant lowering of the host tissue resistance.

The importance of considering the possibility of a fungus infection in all pulmonary and systemic infections of obscure origin is established.

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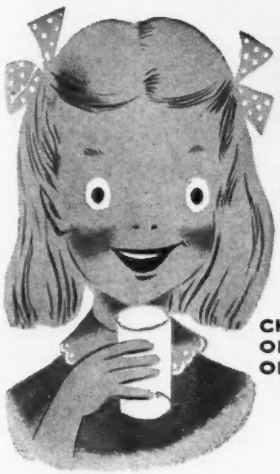

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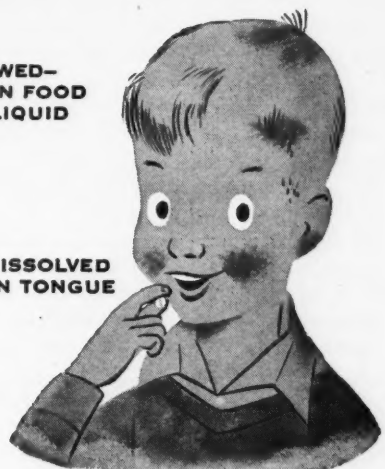

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Birth Rate at New High

The national birth total continued to rise during the first three months of 1953, after setting a new annual record of 3,889,000 births in 1952, according to vital statistics estimates released last month by the Public Health Service.

Births during the first quarter of 1953 were running about 29,000 ahead of the same period last year, an increase of three per cent. March was the 10th consecutive month in which the estimated total births topped corresponding monthly figures for the previous year. The level of births for the first three months is at an annual rate of 25 live births per 1,000 population.

Since the end of World War II, more children have been born every year than in any wartime or prewar year. From 2,858,000 births in 1945, the total soared to 3,817,000 in 1947. After dropping to a slightly lower level for the next three years, birth totals reached a new high in 1951 and broke the record again in 1952.

The figures indicate that 58,000 more couples had a first child in 1951 than in 1950, supposedly a sequel to the marriage upswing that began in June, 1950, at the start of the Korean War. Births of second-born children increased by two per cent over 1950, of third children by nine per cent, and of fourth children by 13 per cent.

Marriages dropped in the last half of 1951, so it is likely that fewer couples had their first child in 1952. Since total births went up in that year, there probably was a further rise in births of second-born or later children.

Study of Hospital Payments

An analysis of payments to hospitals was made recently by the Connecticut Hospital Association from a study of the records of 34 general hospitals in the state for the year ending September 30, 1952. Of particular interest was the fact that only 15 per cent of patient days in the hospital were paid for by the patients. Blue Cross absorbed the costs of 50 per cent of cases and 45.5 per cent of patient days. Commercial insurance carriers paid 24.5 per cent of total hospital charges in both categories. City and town welfare budgets were called on to meet costs for only 1.5 per cent of cases and 2.5 per cent of patient days.

Health education of the public . . . is often considered the responsibility of organized voluntary and official community agencies. Of course, it is also the physician's personal responsibility. He certainly should educate his patients and their families and do what he can as part of the community program. Health education methods have changed materially in recent years, with much greater emphasis on community organization and on helping the people to help themselves.—*Hugh R. Leavell, M.D., New England Journal of Medicine, December 4, 1952.*

The death rate tells only part of the story, that there is still in every community a great reservoir of known and unknown cases of tuberculosis, and that it causes more deaths than any other disease in the age group 15 to 34. Everything points to the need for stepping up the program of case finding throughout the nation and to the need for greatly increased facilities for care of tuberculous persons, but there are now definite signs that the battle against the disease is reaching its final stages.—*Arthur C. Christie, M.D., Journal of American Medical Association, January 10, 1953.*

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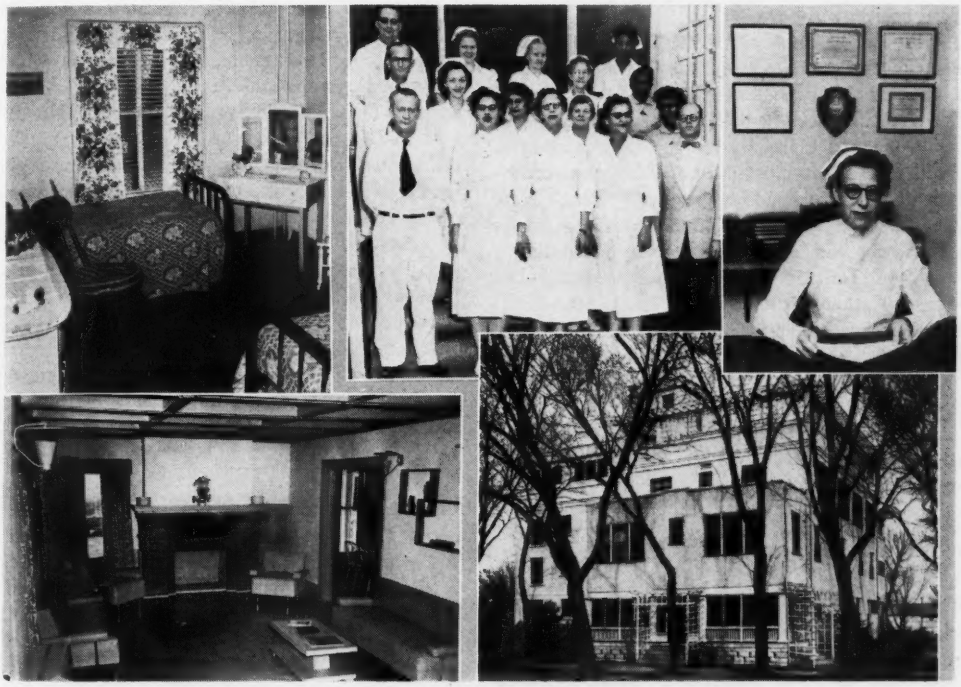

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ANNOUNCEMENTS

The 18th annual meeting of the Mississippi Valley Medical Society will be held at the Elk's Club, Springfield, Illinois, September 23-25. The 10th annual meeting of the American Medical Writers' Association will be held at the same place on September 23.

The scientific meeting will feature 41 speakers in a session planned especially for general practitioners and will include a symposium on diabetes, a clinicopathologic conference, and a panel on "What's New in Medicine and Surgery." The evening program on September 24 will feature an address by Assistant Secretary of Defense (Health and Medical) Dr. Melvin A. Casberg, formerly dean of St. Louis University. There will be no registration fee.

Thirteen speakers will take part in the meeting for medical writers. It, too, will be offered without charge.

Complete details of both programs may be secured from Harold Swanberg, M.D., W.C.U. Building, Quincy, Illinois.

The Mid-Continent Psychiatric Association, a district branch of the American Psychiatric Association, will meet at the Hotel President, Kansas City, Missouri, on September 26 and 27. In addition to a number of local and district essayists, the following speakers will take part: Dr. Kenneth E. Appel of Philadelphia, president of the American Psychiatric Association; Dr. Daniel Blain, Washington, medical director of the American Psychiatric Association; Dr. Lloyd J. Thompson, Winston-Salem, professor of psychiatry at Bowman Gray School of Medicine; Dr. John R. Peters, Los Angeles, from the department of psychiatry at Los Angeles County General Hospital, and Dr. Neville Murray of Galveston, from the department of neurology and psychiatry, University of Texas Medical School.

Leading authorities on tuberculosis from this country and abroad will appear on the program of the Mississippi Valley Trudeau Society and the Mississippi Valley Conference which will be held at the Nicollet Hotel, Minneapolis, October 15-17. Heading the list is Dr. D. G. Madigan, Kent, England, who will discuss "Old Tuberculin and Bacillary Emulsions Under Chemotherapeutics Cover in Treatment of Tuberculosis." Sixteen other well known speakers will also take part.

A feature of the meeting, on October 15, is the annual dinner of the Minnesota Tuberculosis and Health Association, which will include a presentation of the popular Minnesota television program, "The Doctors' Round Table."

The Colorado Heart Association, the University of Colorado School of Medicine, Fitzsimons Army Hospital, and the Colorado Department of Public Health are sponsoring a postgraduate conference on "Clinical Electrocardiography and Recent Advances in Cardiovascular Diseases" during the week of November 9-14, in Denver.

The first three days, for which there is no registration fee, will be devoted to clinical electrocardiography at Fitzsimons Army Hospital. The last two and one-half days will cover the second portion of the program, with a registration fee of $15 for out-of-state physicians. This program will be presented at the Cosmopolitan Hotel.

Requests for further information may be addressed to Col. Edwin M. Goyette, M.C., Fitzsimons Army Hospital, Denver, or to the Colorado Heart Association, 314-14th Street, Denver.

The trustees of the Caleb Fiske Fund of the Rhode Island Medical Society announce as the subject for this year's prize dissertation "Recent Advances in Cardiac Surgery." A cash prize of $250 is offered for the best essay of not more than 10,000 words. Complete information may be secured from the secretary of the fund, Rhode Island Medical Society, 106 Francis Street, Providence 3, Rhode Island.

The American College of Chest Physicians announces that three awards will be given annually to medical students who contribute the best essays on subjects relating to the diagnosis and treatment of chest disease. The first prize will consist of a cash award of $250 and a certificate of merit. Details of the contest may be secured from the Executive Director, American College of Chest Physicians, 112 East Chestnut Street, Chicago 11, Illinois. Entries must be received at that address no later than March 15, 1954.

The fifth annual meeting of the Southwestern Surgical Congress will be held at Salt Lake City, September 21 through 23. Members may attend without charge, and non-members will be assessed a registration fee of $10. The vice-president of the organization is a Kansan, Dr. Howard E. Snyder, Winfield.

Kansans taking part in the session are as follows: Dr. Orville R. Clark, Topeka, a councilor, who will preside at one of the sessions; Dr. Thomas G. Orr, Kansas City, who will serve as moderator at

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a panel discussion on diseases of the colon; Dr. Paul W. Schafer, chairman of the department of surgery at the University of Kansas Medical Center, who will present motion pictures, and Dr. Paul H. Lorhan, of the department of anesthesiology at the University of Kansas, who will present a paper, "Preliminary Report on Hypotensive Anesthesia," written by himself and Dr. Max I. Miller.

The 39th Clinical Congress of the American College of Surgeons will be held October 5 to 9 in Chicago, with headquarters at the Conrad Hilton Hotel. In addition to the program which will include 190 papers, surgery will be telecast from Billings Hospital. More than 11,000 surgeons are expected to attend.

Standards for Medical Record Librarians

A plan to provide more educational facilities for medical record librarians was given temporary approval by the House of Delegates of the A.M.A. at its June meeting, to make possible the establishment of new schools in September of this year. The original essentials for the training of such librarians were established in 1943 by the Council on Medical Education and Hospitals, in co-operation with the American Association of Medical Record Librarians.

The new plan provides for training high school graduates through nine months of instruction in anatomy, medical terminology, secretarial practice, and medical record procedures. Courses may be conducted by general hospitals having a minimum of 4,000 annual admissions, adequate teaching material, and personnel. At present there are 24 schools approved for training librarians who receive one year of hospital training after completion of two years of college or graduation from an accredited school of nursing.

Applications for approval of schools under the new program are to be submitted to the Council on Medical Education and Hospitals, 535 North Dearborn Street, Chicago.

The following quotations were taken from an address given by Emerson P. Schmidt, director of economic research, United States Chamber of Commerce:

"If, over the last quarter of a century, the individual had been as eager for de luxe medicine as he has been for some of the other items mentioned, we would at present have an abundance of medical practitioners and facilities, just as in the case of automobiles. Our economy would have provided medical care just as it has provided an enormous increase in our beauty care personnel and facilities.

"If we had kept the automobile very low on the priority list of our desires, and suddenly raised its priority, we should have to wait some time before the necessary technical preparations for abundant cars were made. This is true also in medical care. . . .

"Perhaps a basic distinction is that the normal person continuously wants the various items mentioned. . . . Furthermore, he cheerfully pays for them. He buys a $2,500 automobile on the installment plan because he wants it. But a $2,500 operation he may regard as a violation of social justice. It is true that he buys an automobile according to a plan, whereas an expensive operation may hit him unexpectedly. . . .

"If provision for hospitals and various health services were given a top priority, it is inconceivable that our economy could not in due course produce almost any desired volume of such services. . . .

"The various factors affecting health are complex and have not been blueprinted. For example, there are many uncertainties as to the relation of food and housing to health, and it is questionable whether an improvement in the area of nutrition is not as important as improvement in medical services as such."

Book Club for Physicians

A book club for physicians, the Medical Book Guild of America, was organized recently to bring medical volumes to doctors at a saving and thus provide wider distribution of medical works. Members may select as few as four books during a two-year period and will pay only for books selected.

Information on the club may be secured from the Blakiston Company, Inc., 575 Madison Avenue, New York 22, New York.

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The story of the needs of the Korean orphans is a typical example of the misery and want of 100,000 parentless children in that land. It is to meet such needs that the American-Korean Foundation is now seeking a relief fund of $5,000,000. It was reported that the antiseptic was "sorely needed" because military personnel could not spare enough.

Pamphlets on Heart Disease Available

A number of pamphlets on heart disease, distributed by the American Heart Association, may be secured without charge from the Kansas Heart Association, 112 West Seventh Street, Topeka. The following titles are available: Food for Your Heart, Heart Disease in Children, Prevention of Rheumatic Fever, Varicose Veins, Diagnosis of Congenital Cardiac Defects in General Practice, Heart Disease in Pregnancy, Returning Cardiacs to Work, Proceedings of First National Conference on Cardiovascular Diseases, and Classification of Patients with Diseases of the Heart.

Health Insurance Booklet Published

The seventh annual revision of the health insurance brochure published by the Council on Medical Service of the A.M.A. is now available on request. In this booklet, "Voluntary Prepayment Medical Benefit Plans," each plan is described by summary of benefits, enrollment at the end of 1952, and other pertinent data. In addition, other types of programs are described to give examples of voluntary methods of insuring some of the costs incident to health care.

New Winthrop-Stearns Film

A new motion picture film in color and sound, illustrating the effectiveness of radiopaque compounds in x-ray visualization of the gall bladder and bile ducts, has been produced by Winthrop-Stearns, Inc., for use by the medical profession. Prints are available for showing to medical society groups and hospitals.

Operative cholangiography and preoperative oral cholecystography are demonstrated in detail in the film, which was made at the Latter Day Saints Hospital, Salt Lake City.

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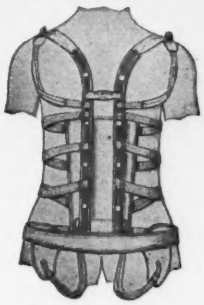

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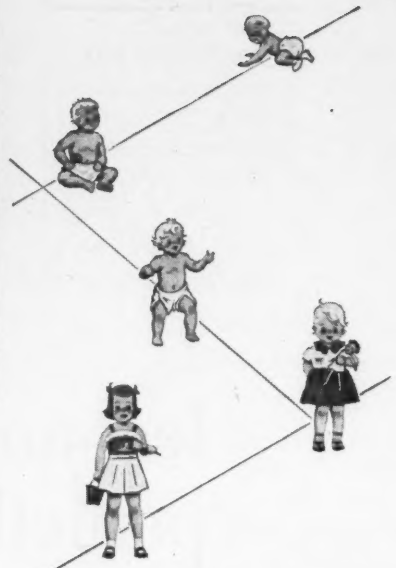

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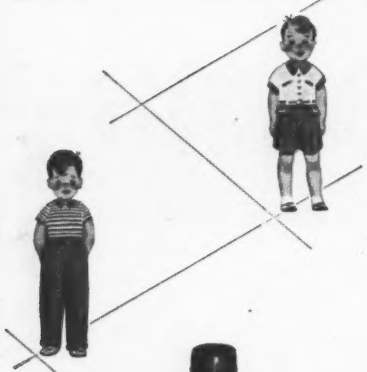

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